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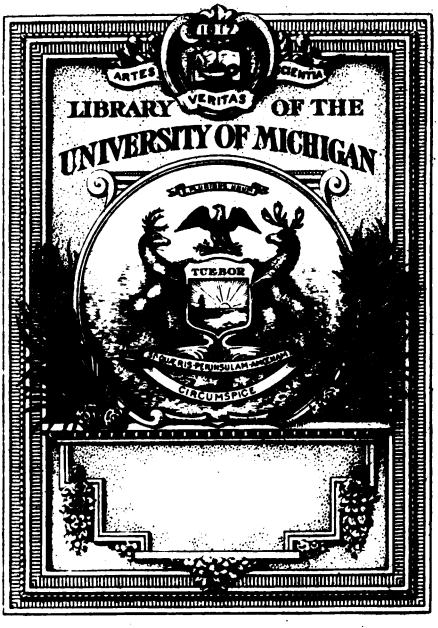

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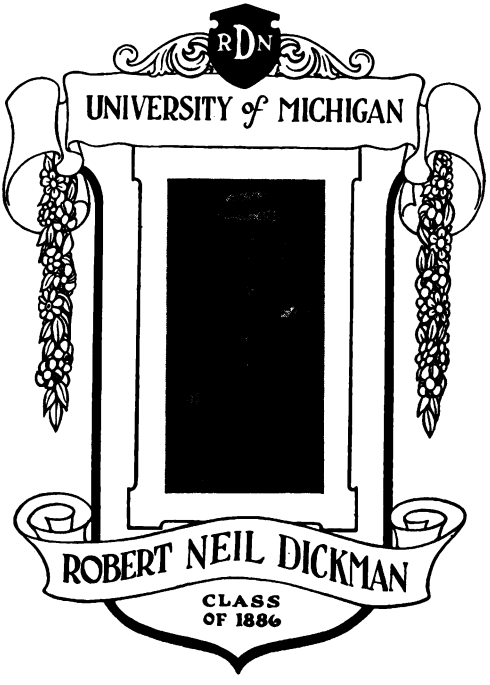
Robert Neil Dickman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Colliery Engineer Co., Scranton, Pa April 20. 1899

THE MINE SURVEYOR'S BOOK OF TABLES:

CONTINING THE

NATURAL SINES, COSINES, TANGENTS, COTANGENTS, SECANTS AND COSECANTS,

FOR

EVERY DEGREE AND MINUTE OF THE QUADRANT, WITH INSTRUCTIONS FOR THEIR USE.

Specially prepared for the use of Students of

THE COLLIERY ENGINEER SCHOOL OF MINES.

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SCRANTON, PA.,
THE COLLIERY ENGINEER CO.
1892.

HOW TO USE THE TABLES.

To find the sine, tangent or secant of any angle from 0° to 90°. In the tables of sines, tangents or secants, find the number of degrees, at the *top* of the page, and the minutes in the column on the *left* side of page; opposite the latter, *under* the head of the number of degrees will be found the desired sine, tangent or secant.

To find the cosine, cotangent or cosecant of any angle from 0° to 90°. In the tables of sines, tangents or secants, find the number of degrees at the *bottom* of the page, and the minutes in the column on the *right* side of the page; opposite the latter, *over* the number of degrees will be found the desired cosine, cotangent or cosecant.

Examples:—To find the sine of 47° 13′, we look in the table of sines, and in the column *under* 47°, and opposite the 13 in the minute column on the *left* of the page, we find ·7339275.

To find the tangent of 47° 13′, we look in the table of tangents, and in the column *under* 47°, and opposite the 13 in the minute column on the *left* of the page, we find 1·0805321.

To find the secant of 47° 13′, we look in the table of secants, and in the column *under* 47°, and opposite the 13 in the minute column on the *left* of the page, we find 1·4722600.

To find the cosine of 47° 13′, we look in the table of sines, and in the column *above* 47°, and opposite the 13 in the minute column on the *right* of the page, we find ·6792278.

To find the cotangent of 47° 13′, we look in the table of tangents, and in the column *above* 47°, and opposite the 13 in the minute column on the *right* of the page, we find ·9254700.

To find the cosecant of 47° 13′, we look in the table of secants, and in the column *above* 47°, and opposite the minute column on the *right* of the page, we find 1·3625324.

Horizontal distance = natural cosine of vertical angle × pitch distance.

Horizontal distance = vertical distance ÷ natural tangent of vertical angle.

Horizontal distance = pitch distance ÷ by secant of vertical angle.

Vertical distance = natural sine of vertical angle × pitch distance.

Robt. Neil Dickman
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Vertical distance = natural tangent of vertical angle × horizontal distance.

Vertical distance = pitch distance ÷ cosecant of vertical angle.

Pitch distance = horizontal distance × secant of vertical angle.

Pitch distance = vertical distance × cosecant of vertical angle.

Pitch distance = horizontal distance ÷ natural cosine of vertical angle.

Pitch distance = vertical distance ÷ natural sine of vertical angle.

Natural sine of vertical angle = vertical distance ÷ pitch distance.

Natural tangent of vertical angle=vertical distance ÷ horizontal distance.

Natural secant of vertical angle = pitch distance ÷ horizontal distance.

Each sine and cosine in the following tables is supposed to have the decimal sign (·) before it.

SOLUTION OF RIGHT ANGLED PLANE TRIANGLES.

Three sides and three angles constitute the six parts of a right angled plane triangle, any two parts of which (not including the right angle) being known, the solution can be made. *One* of the two known parts must be a *side.*

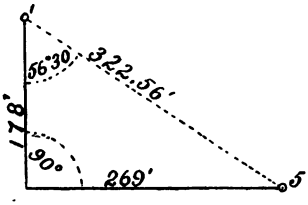
The following relations exist between the angles and sides:

(1) The sine of either angle = the side opposite the angle divided by the hypothenuse.

(2) The cosine of either angle = the side adjacent to the angle divided by the hypothenuse.

(3) The tangent of either angle = the side opposite the angle divided by the side adjacent to the angle.

When it is desired to solve such a triangle mark first, as shown in the figure, the right angle, which is readily detected at a glance. The side opposite this right angle is the hypothenuse, and is shown in the figure by a dotted line. This leaves two sides and two angles yet unnamed.



Next decide upon which of these two angles you are going to use in the solution, as for instance, the one marked 56° 30′ in the figure. There will be a *side opposite*, or across from this angle, which is called the *opposite side.* This same angle is formed by the hypothenuse and another side, and this latter, as it is one of the sides lying next to the angle, is called the *adjacent side.*

The solution may now be effected as follows:

Given the angle 56° 30′ and the length of the hypothenuse, 322.56 feet, to find the other two sides.

To find the base or the side opposite the given angle we have:—

Sine of 56° 30′ $= \frac{\text{side opposite}}{\text{hypothenuse}}$ or side opposite = hypothenuse multiplied by sine, or $322.56 \times .83389 = 269$ feet.

To find the vertical line, which is the *side adjacent* to the given angle, we have:—

Cosine of 56° 30′ $= \frac{\text{side opposite}}{\text{hypothenuse}}$ or side adjacent = hypothenuse multiplied by cosine, or $322.56 \times .55194 = 178$ feet.

Given the angle 56° 30′ and the *side opposite* equal to 269 feet, to find the hypothenuse and other side:—

Sine of 56° 30′ $= \frac{\text{side opposite}}{\text{hypothenuse}}$ or hypothenuse = *side opposite* divided by sine of 56° 30′ or $269 \div .83389 = 322.56$ feet.

To find the *adjacent side* we have:—

Tangent of 56° 30′ $= \frac{\text{side opposite}}{\text{side adjacent}}$ or side adjacent = side opposite divided by tangent of 56° 30′ or $269 \div 1.51084 = 178$ feet.

Given the two sides whose lengths are 269 feet and 178 feet, to find the angle, we have:—

Tangent of required angle = length of side opposite, or 269, divided by length of side adjacent, or 178. Then $269 \div 178 = 1.51123$ as tangent of the required angle. By consulting the table of Natural Tangents, we find that the angle corresponding to the tangent 1.51123 is 56° 30′ or the angle we have been considering.

′	0°	Diff.	1°	Diff.	2°	Diff.	3°	Diff.	4°	Diff.	′
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3	0008727	2909	0183249	2909	0357716	2907	0532074	2905	0706270	2901	57
4	0011636	2908	0186158	2908	0360623	2907	0534979	2904	0709171	2902	56
5	0014544	2909	0189066	2908	0363530	2907	0537883	2905	0712073	2901	55
6	0017453	2909	0191974	2909	0366437	2907	0540788	2905	0714974	2902	54
7	0020362	2909	0194883	2908	0369344	2907	0543693	2904	0717876	2901	53
8	0023271	2909	0197791	2908	0372251	2907	0546597	2905	0720777	2901	52
9	0026180	2909	0200699	2909	0375158	2907	0549502	2904	0723678	2902	51
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13	0037815	2909	0212332	2909	0386785	2907	0561119	2905	0735283	2901	47
14	0040724	2909	0215241	2908	0389692	2906	0564024	2904	0738184	2901	46
15	0043633	2909	0218149	2908	0392598	2907	0566928	2904	0741085	2901	45
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6	1753667	2864	1925220	2854	2096186	2844	2266513	2833	2436150	2821	54
7	1756531	2864	1928074	2854	2099030	2844	2269346	2833	2438971	2821	53
8	1759395	2863	1930928	2854	2101874	2844	2272179	2833	2441792	2821	52
9	1762258	2863	1933782	2854	2104718	2843	2275012	2832	2444613	2820	51
10	1765121	2863	1936636	2854	2107561	2844	2277844	2833	2447433	2821	50
11	1767984	2863	1939490	2854	2110405	2843	2280677	2832	2450254	2820	49
12	1770847	2863	1942344	2853	2113248	2843	2283509	2832	2453074	2820	48
13	1773710	2863	1945197	2853	2116091	2843	2286341	2831	2455894	2819	47
14	1776573	2863	1948050	2853	2118934	2843	2289172	2832	2458713	2820	46
15	1779435	2863	1950903	2853	2121777	2842	2292004	2831	2461533	2819	45
16	1782298	2862	1953756	2853	2124619	2843	2294835	2831	2464352	2819	44
17	1785160	2862	1956609	2852	2127462	2842	2297666	2831	2467171	2819	43
18	1788022	2862	1959461	2853	2130304	2842	2300497	2831	2469990	2819	42
19	1790884	2862	1962314	2852	2133146	2842	2303328	2831	2472809	2818	41
20	1793746	2861	1965166	2852	2135988	2841	2306159	2830	2475627	2818	40
21	1796607	2862	1968018	2852	2138829	2842	2308989	2830	2478445	2818	39
22	1799469	2861	1970870	2852	2141671	2841	2311819	2830	2481263	2818	38
23	1802330	2861	1973722	2851	2144512	2841	2314649	2830	2484081	2818	37
24	1805191	2861	1976573	2852	2147353	2841	2317479	2830	2486899	2817	36
25	1808052	2861	1979425	2851	2150194	2841	2320309	2829	2489716	2817	35
26	1810913	2861	1982276	2851	2153035	2841	2323138	2829	2492533	2817	34
27	1813774	2861	1985127	2851	2155876	2840	2325967	2829	2495350	2817	33
28	1816635	2860	1987978	2851	2158716	2840	2328796	2829	2498167	2817	32
29	1819495	2860	1990829	2850	2161556	2840	2331625	2829	2500984	2816	31
30	1822355	2860	1993679	2851	2164396	2840	2334454	2828	2503800	2816	30
31	1825215	2860	1996530	2850	2167236	2840	2337282	2828	2506616	2816	29
32	1828075	2860	1999380	2850	2170076	2839	2340110	2828	2509432	2816	28
33	1830935	2860	2002230	2850	2172915	2839	2342938	2828	2512248	2815	27
34	1833795	2859	2005080	2850	2175754	2839	2345766	2828	2515063	2816	26
35	1836654	2860	2007930	2849	2178593	2839	2348594	2827	2517879	2815	25
36	1839514	2859	2010779	2850	2181432	2839	2351421	2827	2520694	2814	24
37	1842373	2859	2013629	2849	2184271	2839	2354248	2827	2523508	2815	23
38	1845232	2859	2016478	2849	2187110	2838	2357075	2827	2526323	2814	22
39	1848091	2858	2019327	2849	2189948	2838	2359902	2827	2529137	2815	21
40	1850949	2859	2022176	2848	2192786	2838	2362729	2826	2531952	2814	20
41	1853808	2858	2025024	2849	2195624	2838	2365555	2826	2534766	2813	19
42	1856666	2858	2027873	2848	2198462	2838	2368381	2826	2537579	2814	18
43	1859524	2858	2030721	2848	2201300	2837	2371207	2826	2540393	2813	17
44	1862382	2858	2033569	2849	2204137	2837	2374033	2826	2543206	2813	16
45	1865240	2858	2036418	2847	2206974	2837	2376859	2825	2546019	2813	15
46	1868098	2858	2039265	2848	2209811	2837	2379684	2826	2548832	2813	14
47	1870956	2857	2042113	2848	2212648	2837	2382510	2825	2551645	2813	13
48	1873813	2857	2044961	2847	2215485	2836	2385335	2824	2554458	2812	12
49	1876670	2858	2047808	2847	2218321	2837	2388159	2825	2557270	2812	11
50	1879528	2857	2050655	2847	2221158	2836	2390984	2824	2560082	2812	10
51	1882385	2856	2053502	2847	2223994	2836	2393808	2825	2562894	2811	9
52	1885241	2857	2056349	2846	2226830	2836	2396633	2824	2565705	2812	8
53	1888098	2856	2059195	2847	2229666	2835	2399457	2823	2568517	2811	7
54	1890954	2857	2062042	2846	2232501	2836	2402280	2824	2571328	2811	6
55	1893811	2856	2064888	2846	2235337	2835	2405104	2823	2574139	2811	5
56	1896667	2856	2067734	2846	2238172	2835	2407927	2824	2576950	2810	4
57	1899523	2856	2070580	2846	2241007	2835	2410751	2823	2579760	2810	3
58	1902379	2855	2073426	2846	2243842	2834	2413574	2822	2582570	2811	2
59	1905234	2856	2076272	2845	2246676	2835	2416396	2823	2585381	2809	1
60	1908090	2855	2079117	2845	2249511	2834	2419219	2822	2588190	2810	0
′	79°	Diff.	78°	Diff.	77°	Diff.	76°	Diff.	75°	Diff.	′

′	15°	Diff.	16°	Diff.	17°	Diff.	18°	Diff.	19°	Diff.	′
0	2588190	2810	2756374	2796	2923717	2782	3090170	2766	3255682	2750	60
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2	2593810	2809	2761965	2796	2929280	2781	3095702	2766	3261182	2750	58
3	2596619	2809	2764761	2795	2932061	2781	3098468	2766	3263932	2749	57
4	2599428	2809	2767556	2796	2934842	2781	3101234	2765	3266681	2749	56
5	2602237	2808	2770352	2795	2937623	2780	3103999	2765	3269430	2749	55
6	2605045	2808	2773147	2794	2940403	2780	3106764	2765	3272179	2749	54
7	2607853	2809	2775941	2795	2943183	2780	3109529	2765	3274928	2748	53
8	2610662	2807	2778736	2794	2945963	2780	3112294	2764	3277676	2748	52
9	2613469	2808	2781530	2794	2948743	2779	3115058	2764	3280424	2748	51
10	2616277	2808	2784324	2794	2951522	2780	3117822	2764	3283172	2747	50
11	2619085	2807	2787118	2793	2954302	2779	3120586	2763	3285919	2747	49
12	2621892	2807	2789911	2793	2957081	2778	3123349	2763	3288666	2747	48
13	2624699	2807	2792704	2793	2959859	2779	3126112	2763	3291413	2747	47
14	2627506	2806	2795497	2793	2962638	2778	3128875	2763	3294160	2746	46
15	2630312	2806	2798290	2793	2965416	2778	3131638	2762	3296906	2747	45
16	2633118	2807	2801083	2792	2968194	2777	3134400	2763	3299653	2745	44
17	2635925	2805	2803875	2792	2970971	2778	3137163	2762	3302398	2746	43
18	2638730	2806	2806667	2792	2973749	2777	3139925	2761	3305144	2745	42
19	2641536	2806	2809459	2792	2976526	2777	3142686	2762	3307889	2745	41
20	2644342	2805	2812251	2791	2979303	2776	3145448	2761	3310634	2745	40
21	2647147	2805	2815042	2791	2982079	2777	3148209	2760	3313379	2744	39
22	2649952	2805	2817833	2791	2984856	2776	3150969	2761	3316123	2744	38
23	2652757	2804	2820624	2791	2987632	2776	3153730	2760	3318867	2744	37
24	2655561	2805	2823415	2790	2990408	2776	3156490	2760	3321611	2744	36
25	2658366	2804	2826205	2790	2993184	2775	3159250	2760	3324355	2743	35
26	2661170	2803	2828995	2790	2995959	2775	3162010	2760	3327098	2743	34
27	2663973	2804	2831785	2790	2998734	2775	3164770	2759	3329841	2743	33
28	2666777	2804	2834575	2789	3001509	2775	3167529	2759	3332584	2742	32
29	2669581	2803	2837364	2789	3004284	2774	3170288	2759	3335326	2743	31
30	2672384	2803	2840153	2789	3007058	2774	3173047	2758	3338069	2741	30
31	2675187	2802	2842942	2789	3009832	2774	3175805	2758	3340810	2742	29
32	2677989	2803	2845731	2789	3012606	2774	3178563	2758	3343552	2741	28
33	2680792	2802	2848520	2788	3015380	2773	3181321	2758	3346293	2741	27
34	2683594	2802	2851308	2788	3018153	2773	3184079	2757	3349034	2741	26
35	2686396	2802	2854096	2788	3020926	2773	3186836	2757	3351775	2741	25
36	2689198	2802	2856884	2787	3023699	2772	3189593	2757	3354516	2740	24
37	2692000	2801	2859671	2787	3026471	2773	3192350	2756	3357256	2740	23
38	2694801	2801	2862458	2788	3029244	2772	3195106	2757	3359996	2739	22
39	2697602	2801	2865246	2786	3032016	2772	3197863	2756	3362735	2740	21
40	2700403	2801	2868032	2787	3034788	2771	3200619	2755	3365475	2739	20
41	2703204	2800	2870819	2786	3037559	2772	3203374	2756	3368214	2739	19
42	2706004	2801	2873605	2786	3040331	2771	3206130	2755	3370953	2738	18
43	2708805	2800	2876391	2786	3043102	2770	3208885	2755	3373691	2738	17
44	2711605	2799	2879177	2786	3045872	2771	3211640	2755	3376429	2738	16
45	2714404	2800	2881963	2785	3048643	2770	3214395	2754	3379167	2738	15
46	2717204	2799	2884748	2785	3051413	2770	3217149	2754	3381905	2737	14
47	2720003	2799	2887533	2785	3054183	2770	3219903	2754	3384642	2737	13
48	2722802	2799	2890318	2785	3056953	2770	3222657	2754	3387379	2737	12
49	2725601	2799	2893103	2784	3059723	2769	3225411	2753	3390116	2736	11
50	2728400	2798	2895887	2784	3062492	2769	3228164	2753	3392852	2737	10
51	2731198	2799	2898671	2784	3065261	2769	3230917	2753	3395589	2736	9
52	2733997	2797	2901455	2784	3068030	2768	3233670	2752	3398325	2735	8
53	2736794	2798	2904239	2783	3070798	2768	3236422	2752	3401060	2736	7
54	2739592	2798	2907022	2783	3073566	2768	3239174	2752	3403796	2735	6
55	2742390	2797	2909805	2783	3076334	2768	3241926	2752	3406531	2734	5
56	2745187	2797	2912588	2783	3079102	2767	3244678	2751	3409265	2735	4
57	2747984	2797	2915371	2782	3081869	2767	3247429	2751	3412000	2734	3
58	2750781	2796	2918153	2782	3084636	2767	3250180	2751	3414734	2734	2
59	2753577	2797	2920935	2782	3087403	2767	3252931	2751	3417468	2733	1
60	2756374	2796	2923717	2782	3090170	2766	3255682	2750	3420201	2734	0
′	74°	Diff.	73°	Diff.	72°	Diff.	71°	Diff.	70°	Diff.	′

′	20°	Diff.	21°	Diff.	22°	Diff.	23°	Diff.	24°	Diff.	′
0	3420201	2734	3583679	2716	3746066	2697	3907311	2678	4067366	2658	60
1	3422935	2733	3586395	2715	3748763	2696	3909989	2677	4070024	2657	59
2	3425668	2732	3589110	2715	3751459	2697	3912666	2677	4072681	2656	58
3	3428400	2733	3591825	2715	3754156	2696	3915343	2676	4075337	2656	57
4	3431133	2732	3594540	2714	3756852	2695	3918019	2676	4077993	2656	56
5	3433865	2732	3597254	2714	3759547	2696	3920695	2676	4080649	2656	55
6	3436597	2732	3599968	2714	3762243	2695	3923371	2676	4083305	2655	54
7	3439329	2731	3602682	2713	3764938	2694	3926047	2675	4085960	2655	53
8	3442060	2731	3605395	2713	3767632	2695	3928722	2675	4088615	2654	52
9	3444791	2730	3608108	2713	3770327	2694	3931397	2674	4091269	2654	51
10	3447521	2731	3610821	2713	3773021	2693	3934071	2674	4093923	2654	50
11	3450252	2730	3613534	2712	3775714	2694	3936745	2674	4096577	2653	49
12	3452982	2730	3616246	2712	3778408	2693	3939419	2674	4099230	2653	48
13	3455712	2729	3618958	2711	3781101	2693	3942093	2673	4101883	2653	47
14	3458441	2730	3621669	2711	3783794	2692	3944766	2673	4104536	2653	46
15	3461171	2729	3624380	2711	3786486	2692	2947439	2672	4107189	2652	45
16	3463900	2728	3627091	2711	3789178	2692	3950111	2672	4109841	2651	44
17	3466628	2729	3629802	2710	3791870	2692	3952783	2672	4112492	2652	43
18	3469357	2728	3632512	2710	3794562	2691	3955455	2672	4115144	2651	42
19	3472085	2727	3635222	2710	3797253	2691	3958127	2671	4117795	2650	41
20	3474812	2728	3637932	2709	3799944	2690	3960798	2670	4120445	2651	40
21	3477540	2727	3640641	2710	3802634	2690	3963468	2671	4123096	2649	39
22	3480267	2727	3643351	2708	3805324	2690	3966139	2670	4125745	2650	38
23	3482994	2726	3646059	2709	3808014	2690	3968809	2670	4128395	2649	37
24	3485720	2727	3648768	2708	3810704	2689	3971479	2669	4131044	2649	36
25	3488447	2726	3651476	2708	3813393	2689	3974148	2670	4133693	2649	35
26	3491173	2725	3654184	2707	3816082	2688	3976818	2668	4136342	2648	34
27	3493898	2726	3656891	2708	3818770	2689	3979486	2669	4138990	2648	33
28	3496624	2725	3659599	2707	3821459	2688	3982155	2668	4141638	2647	32
29	3499349	2725	3662306	2706	3824147	2687	3984823	2668	4144285	2647	31
30	3502074	2724	3665012	2707	3826834	2688	3987491	2667	4146932	2647	30
31	3504798	2725	3667719	2706	3829522	2687	3990158	2667	4149579	2647	29
32	3507523	2723	3670425	2705	3832209	2686	3992825	2667	4152226	2646	28
33	3510246	2724	3673130	2706	3834895	2687	3995492	2666	4154872	2645	27
34	3512970	2723	3675836	2705	3837582	2686	3998158	2667	4157517	2646	26
35	3515693	2723	3678541	2705	3840268	2685	4000825	2665	4160163	2645	25
36	3518416	2723	3681246	2704	3842953	2686	4003490	2666	4162808	2645	24
37	3521139	2723	3683950	2704	3845639	2685	4006156	2665	4165453	2644	23
38	3523862	2722	3686654	2704	3848324	2684	4008821	2665	4168097	2644	22
39	3526584	2722	3689358	2703	3851008	2685	4011486	2664	4170741	2644	21
40	3529306	2721	3692061	2704	3853693	2684	4014150	2664	4173385	2643	20
41	3532027	2721	3694765	2703	3856377	2683	4016814	2664	4176028	2643	19
42	3534748	2721	3697468	2702	3859060	2684	4019478	2663	4178671	2642	18
43	3537469	2721	3700170	2702	3861744	2683	4022141	2663	4181313	2643	17
44	3540190	2720	3702872	2702	3864427	2683	4024804	2663	4183956	2641	16
45	3542910	2720	3705574	2702	3867110	2682	4027467	2662	4186597	2642	15
46	3545630	2720	3708276	2701	3869792	2682	4030129	2662	4189239	2641	14
47	3548350	2720	3710977	2701	3872474	2682	4032791	2662	4191880	2641	13
48	3551070	2719	3713678	2701	3875156	2681	4035453	2661	4194521	2640	12
49	3553789	2719	3716379	2700	3877837	2681	4038114	2661	4197161	2640	11
50	3556508	2718	3719079	2701	3880518	2681	4040775	2661	4199801	2640	10
51	3559226	2718	3721780	2699	3883199	2681	4043436	2660	4202441	2639	9
52	3561944	2718	3724479	2700	3885880	2680	4046096	2660	4205080	2639	8
53	3564662	2718	3727179	2699	3888560	2680	4048756	2660	4207719	2639	7
54	3567380	2717	3729878	2699	3891240	2679	4051416	2659	4210358	2638	6
55	3570097	2717	3732577	2698	3893919	2679	4054075	2659	4212996	2638	5
56	3572814	2717	3735275	2698	3896598	2679	4056734	2659	4215634	2638	4
57	3575531	2717	3737973	2698	3899277	2678	4059393	2658	4218272	2637	3
58	3578248	2716	3740671	2698	3901955	2678	4062051	2658	4220909	2637	2
59	3580964	2715	3743369	2697	3904633	2678	4064709	2657	4223546	2637	1
60	3583679	2716	3746066	2697	3907311	2678	4067366	2658	4226183	2636	0
′	69°	Diff.	68°	Diff.	67°	Diff.	66°	Diff.	65°	Diff.	′

′	25°	Diff.	26°	Diff.	27°	Diff.	28°	Diff.	29°	Diff.	′
0	4226183	2636	4383711	2615	4539905	2592	4694716	2568	4848096	2544	60
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2	4231455	2635	4388940	2613	4545088	2591	4699852	2567	4853184	2543	58
3	4234090	2635	4391553	2613	4547679	2590	4702419	2567	4855727	2543	57
4	4236725	2635	4394166	2613	4550269	2590	4704986	2567	4858270	2542	56
5	4239360	2634	4396779	2613	4552859	2590	4707553	2566	4860812	2542	55
6	4241994	2634	4399392	2612	4555449	2589	4710119	2566	4863354	2541	54
7	4244628	2634	4402004	2611	4558038	2589	4712685	2565	4865895	2541	53
8	4247262	2633	4404615	2612	4560627	2589	4715250	2565	4868436	2541	52
9	4249895	2633	4407227	2611	4563216	2588	4717815	2565	4870977	2540	51
10	4252528	2633	4409838	2610	4565804	2588	4720380	2564	4873517	2540	50
11	4255161	2632	4412448	2611	4568392	2587	4722944	2564	4876057	2540	49
12	4257793	2632	4415059	2609	4570979	2587	4725508	2563	4878597	2539	48
13	4260425	2631	4417668	2610	4573566	2587	4728071	2563	4881136	2538	47
14	4263056	2631	4420278	2609	4576153	2586	4730634	2563	4883674	2538	46
15	4265687	2631	4422887	2609	4578739	2586	4733197	2562	4886212	2538	45
16	4268318	2631	4425496	2608	4581325	2585	4735759	2562	4888750	2538	44
17	4270949	2630	4428104	2608	4583910	2586	4738321	2561	4891288	2537	43
18	4273579	2629	4430712	2607	4586496	2584	4740882	2561	4893825	2536	42
19	4276208	2630	4433319	2608	4589080	2585	4743443	2561	4896361	2536	41
20	4278838	2629	4435927	2607	4591665	2583	4746004	2560	4898897	2536	40
21	4281467	2628	4438534	2606	4594248	2584	4748564	2560	4901433	2535	39
22	4284095	2628	4441140	2606	4596832	2583	4751124	2559	4903968	2535	38
23	4286723	2628	4443746	2606	4599415	2583	4753683	2559	4906503	2535	37
24	4289351	2628	4446352	2605	4601998	2582	4756242	2559	4909038	2534	36
25	4291979	2627	4448957	2605	4604580	2582	4758801	2558	4911572	2533	35
26	4294606	2627	4451562	2605	4607162	2582	4761359	2558	4914105	2533	34
27	4297233	2626	4454167	2604	4609744	2581	4763917	2557	4916638	2533	33
28	4299859	2626	4456771	2604	4612325	2581	4766474	2557	4919171	2533	32
29	4302485	2626	4459375	2603	4614906	2580	4769031	2557	4921704	2532	31
30	4305111	2625	4461978	2603	4617486	2580	4771588	2556	4924236	2531	30
31	4307736	2625	4464581	2603	4620066	2580	4774144	2556	4926767	2531	29
32	4310361	2625	4467184	2602	4622646	2579	4776700	2555	4929298	2531	28
33	4312986	2624	4469786	2602	4625225	2579	4779255	2555	4931829	2530	27
34	4315610	2624	4472388	2602	4627804	2578	4781810	2554	4934359	2530	26
35	4318234	2623	4474990	2601	4630382	2578	4784364	2555	4936889	2530	25
36	4320857	2624	4477591	2601	4632960	2578	4786919	2553	4939419	2529	24
37	4323481	2622	4480192	2600	4635538	2577	4789472	2554	4941948	2528	23
38	4326103	2623	4482792	2600	4638115	2577	4792026	2553	4944476	2529	22
39	4328726	2622	4485392	2600	4640692	2577	4794579	2552	4947005	2527	21
40	4331348	2622	4487992	2599	4643269	2576	4797131	2552	4949532	2528	20
41	4333970	2621	4490591	2599	4645845	2575	4799683	2552	4952060	2527	19
42	4336591	2621	4493190	2599	4648420	2576	4802235	2551	4954587	2526	18
43	4339212	2620	4495789	2598	4650996	2575	4804786	2551	4957113	2526	17
44	4341832	2621	4498387	2597	4653571	2574	4807337	2551	4959639	2526	16
45	4344453	2619	4500984	2598	4656145	2574	4809888	2550	4962165	2525	15
46	4347072	2620	4503582	2597	4658719	2574	4812438	2549	4964690	2525	14
47	4349692	2619	4506179	2596	4661293	2573	4814987	2550	4967215	2525	13
48	4352311	2619	4508775	2597	4663866	2573	4817537	2549	4969740	2524	12
49	4354930	2618	4511372	2595	4666439	2573	4820086	2548	4972264	2523	11
50	4357548	2618	4513967	2596	4669012	2572	4822634	2548	4974787	2523	10
51	4360166	2618	4516563	2595	4671584	2572	4825182	2548	4977310	2523	9
52	4362784	2617	4519158	2595	4674156	2571	4827730	2547	4979833	2522	8
53	4365401	2617	4521753	2594	4676727	2571	4830277	2547	4982355	2522	7
54	4368018	2616	4524347	2594	4679298	2571	4832824	2546	4984877	2522	6
55	4370634	2617	4526941	2594	4681869	2570	4835370	2546	4987399	2521	5
56	4373251	2615	4529535	2593	4684439	2570	4837916	2546	4989920	2521	4
57	4375866	2616	4532128	2593	4687009	2569	4840462	2545	4992441	2520	3
58	4378482	2615	4534721	2592	4689578	2569	4843007	2545	4994961	2520	2
59	4381097	2614	4537313	2592	4692147	2569	4845552	2544	4997481	2519	1
60	4383711	2615	4539905	2592	4694716	2568	4848096	2544	5000000	2519	0
′	64°	Diff.	63°	Diff.	62°	Diff.	61°	Diff.	60°	Diff.	′

′	30°	Diff.	31°	Diff.	32°	Diff.	33°	Diff.	34°	Diff.	′
0	5000000	2519	5150381	2493	5299193	2466	5446390	2440	5591929	2411	60
1	5002519	2518	5152874	2493	5301659	2466	5448830	2439	5594340	2411	59
2	5005037	2519	5155367	2492	5304125	2466	5451269	2438	5596751	2411	58
3	5007556	2517	5157859	2492	5306591	2466	5453707	2438	5599162	2410	57
4	5010073	2518	5160351	2491	5309057	2464	5456145	2438	5601572	2409	56
5	5012591	2516	5162842	2491	5311521	2465	5458583	2437	5603981	2409	55
6	5015107	2517	5165333	2491	5313986	2464	5461020	2436	5606390	2408	54
7	5017624	2516	5167824	2490	5316450	2463	5463456	2436	5608798	2408	53
8	5020140	2515	5170314	2490	5318913	2463	5465892	2436	5611206	2408	52
9	5022655	2515	5172804	2489	5321376	2463	5468328	2435	5613614	2407	51
10	5025170	2515	5175293	2489	5323839	2462	5470763	2435	5616021	2407	50
11	5027685	2514	5177782	2488	5326301	2462	5473198	2434	5618428	2406	49
12	5030199	2514	5180270	2488	5328763	2461	5475632	2434	5620834	2405	48
13	5032713	2514	5182758	2488	5331224	2461	5478066	2433	5623239	2406	47
14	5035227	2513	5185246	2487	5333685	2460	5480499	2433	5625645	2404	46
15	5037740	2512	5187733	2486	5336145	2460	5482932	2433	5628049	2404	45
16	5040252	2513	5190219	2486	5338605	2460	5485365	2432	5630453	2404	44
17	5042765	2511	5192705	2486	5341065	2458	5487797	2431	5632857	2403	43
18	5045276	2512	5195191	2485	5343523	2459	5490228	2431	5635260	2403	42
19	5047788	2510	5197676	2485	5345982	2458	5492659	2431	5637663	2403	41
20	5050298	2511	5200161	2485	5348440	2458	5495090	2430	5640066	2401	40
21	5052809	2510	5202646	2484	5350898	2457	5497520	2430	5642467	2402	39
22	5055319	2509	5205130	2483	5353355	2457	5499950	2429	5644869	2401	38
23	5057828	2510	5207613	2483	5355812	2456	5502379	2428	5647270	2400	37
24	5060338	2508	5210096	2483	5358268	2456	5504807	2429	5649670	2400	36
25	5062846	2509	5212579	2482	5360724	2455	5507236	2427	5652070	2399	35
26	5065355	2508	5215061	2482	5363179	2455	5509663	2428	5654469	2399	34
27	5067863	2507	5217543	2481	5365634	2455	5512091	2427	5656868	2399	33
28	5070370	2507	5220024	2481	5368089	2454	5514518	2426	5659267	2398	32
29	5072877	2507	5222505	2481	5370543	2453	5516944	2426	5661665	2397	31
30	5075384	2506	5224986	2480	5372996	2453	5519370	2425	5664062	2397	30
31	5077890	2506	5227466	2479	5375449	2453	5521795	2425	5666459	2397	29
32	5080396	2505	5229945	2479	5377902	2452	5524220	2425	5668856	2396	28
33	5082901	2505	5232424	2479	5380354	2452	5526645	2424	5671252	2396	27
34	5085406	2504	5234903	2478	5382806	2451	5529069	2423	5673648	2395	26
35	5087910	2504	5237381	2478	5385257	2351	5531492	2423	5676043	2394	25
36	5090414	2504	5239859	2477	5387708	2450	5533915	2423	5678437	2395	24
37	5092918	2503	5242336	2477	5390158	2450	5536338	2422	5680832	2393	23
38	5095421	2503	5244813	2477	5392608	2450	5538760	2422	5683225	2394	22
39	5097924	2502	5247290	2476	5395058	2449	5541182	2421	5685619	2392	21
40	5100426	2502	5249766	2475	5397507	2448	5543603	2421	5688011	2392	20
41	5102928	2501	5252241	2476	5399955	2448	5546024	2420	5690403	2392	19
42	5105429	2501	5254717	2474	5402403	2448	5548444	2420	5692795	2392	18
43	5107930	2501	5257191	2474	5404851	2447	5550864	2419	5695187	2390	17
44	5110431	2500	5259665	2474	5407298	2447	5553283	2419	5697577	2391	16
45	5112931	2500	5262139	2474	5409745	2446	5555702	2419	5699968	2389	15
46	5115431	2499	5264613	2472	5412191	2446	5558121	2418	5702357	2390	14
47	5117930	2499	5267085	2473	5414637	2445	5560539	2417	5704747	2389	13
48	5120429	2498	5269558	2472	5417082	2445	5562956	2417	5707136	2388	12
49	5122927	2498	5272030	2472	5419527	2444	5565373	2417	5709524	2388	11
50	5125425	2498	5274502	2471	5421971	2444	5567790	2416	5711912	2387	10
51	5127923	2497	5276973	2470	5424415	2444	5570206	2415	5714299	2387	9
52	5130420	2496	5279443	2471	5426859	2443	5572621	2415	5716686	2387	8
53	5132916	2497	5281914	2469	5429302	2442	5575036	2415	5719073	2386	7
54	5135413	2495	5284383	2470	5431744	2443	5577451	2414	5721459	2385	6
55	5137908	2496	5286853	2469	5434187	2441	5579865	2414	5723844	2385	5
56	5140404	2495	5289322	2468	5436628	2441	5582279	2413	5726229	2385	4
57	5142899	2494	5291790	2468	5439069	2441	5584692	2413	5728614	2384	3
58	5145393	2494	5294258	2468	5441510	2441	5587105	2412	5730998	2383	2
59	5147887	2494	5296726	2467	5443951	2439	5589517	2412	5733381	2383	1
60	5150381	2493	5299193	2466	5446390	2440	5591929	2411	5735764	2383	0
′	59°	Diff.	58°	Diff.	57°	Diff.	56°	Diff.	55°	Diff.	′

'	35°	Diff.	36°	Diff.	37°	Diff.	38°	Diff.	39°	Diff.	'
0	5735764	2383	5877853	2353	6018150	2323	6156615	2292	6293204	2260	60
1	5738147	2382	5880206	2352	6020473	2322	6158907	2291	6295464	2260	59
2	5740529	2382	5882558	2352	6022795	2322	6161198	2291	6297724	2259	58
3	5742911	2381	5884910	2352	6025117	2322	6163489	2291	6299983	2259	57
4	5745292	2380	5887262	2351	6027439	2321	6165780	2289	6302242	2258	56
5	5747672	2381	5889613	2351	6029760	2320	6168069	2290	6304500	2258	55
6	5750053	2379	5891964	2350	6032080	2320	6170359	2289	6306758	2257	54
7	5752432	2379	5894314	2349	6034400	2319	6172648	2288	6309015	2257	53
8	5754811	2379	5896663	2349	6036719	2319	6174936	2288	6311272	2256	52
9	5757190	2378	5899012	2349	6039038	2318	6177224	2287	6313528	2256	51
10	5759568	2378	5901361	2348	6041356	2318	6179511	2287	6315784	2255	50
11	5761946	2377	5903709	2348	6043674	2317	6181798	2286	6318039	2254	49
12	5764323	2377	5906057	2347	6045991	2317	6184084	2286	6320293	2254	48
13	5766700	2376	5908404	2346	6048308	2316	6186370	2285	6322547	2253	47
14	5769076	2376	5910750	2346	6050624	2316	6188655	2284	6324800	2253	46
15	5771452	2375	5913096	2346	6052940	2315	6190939	2285	6327053	2253	45
16	5773827	2375	5915442	2345	6055255	2315	6193224	2283	6329306	2251	44
17	5776202	2374	5917787	2345	6057570	2314	6195507	2283	6331557	2252	43
18	5778576	2374	5920132	2344	6059884	2314	6197790	2283	6333809	2250	42
19	5780950	2373	5922476	2343	6062198	2313	6200073	2282	6336059	2251	41
20	5783323	2373	5924819	2344	6064511	2313	6202355	2281	6338310	2249	40
21	5785696	2373	5927163	2342	6066824	2312	6204636	2281	6340559	2249	39
22	5788069	2371	5929505	2342	6069136	2311	6206917	2281	6342808	2249	38
23	5790440	2372	5931847	2342	6071447	2311	6209198	2280	6345057	2248	37
24	5792812	2371	5934189	2341	6073758	2311	6211478	2279	6347305	2248	36
25	5795183	2370	5936530	2341	6076069	2310	6213757	2279	6349553	2247	35
26	5797553	2370	5938871	2340	6078379	2310	6216036	2278	6351800	2246	34
27	5799923	2369	5941211	2339	6080689	2309	6218314	2278	6354046	2246	33
28	5802292	2369	5943550	2339	6082998	2308	6220592	2278	6356292	2245	32
29	5804661	2369	5945889	2339	6085306	2308	6222870	2276	6358537	2245	31
30	5807030	2367	5948228	2338	6087614	2308	6225146	2277	6360782	2244	30
31	5809397	2368	5950566	2338	6089922	2307	6227423	2275	6363026	2244	29
32	5811765	2367	5952904	2337	6092229	2306	6229698	2276	6365270	2243	28
33	5814132	2366	5955241	2336	6094535	2306	6231974	2274	6367513	2243	27
34	5816498	2366	5957577	2336	6096841	2306	6234248	2274	6369756	2242	26
35	5818864	2366	5959913	2336	6099147	2305	6236522	2274	6371998	2242	25
36	5821230	2365	5962249	2335	6101452	2304	6238796	2273	6374240	2241	24
37	5823595	2364	5964584	2334	6103756	2304	6241069	2273	6376481	2240	23
38	5825959	2364	5966918	2334	6106060	2303	6243342	2272	6378721	2240	22
39	5828323	2364	5969252	2334	6108363	2303	6245614	2271	6380961	2240	21
40	5830687	2363	5971586	2333	6110666	2303	6247885	2271	6383201	2239	20
41	5833050	2362	5973919	2332	6112969	2301	6250156	2271	6385440	2238	19
42	5835412	2362	5976251	2332	6115270	2302	6252427	2269	6387678	2238	18
43	5837774	2362	5978583	2332	6117572	2301	6254696	2270	6389916	2237	17
44	5840136	2361	5980915	2331	6119873	2300	6256966	2269	6392153	2237	16
45	5842497	2360	5983246	2331	6122173	2300	6259235	2268	6394390	2236	15
46	5844857	2360	5985577	2329	6124473	2299	6261503	2268	6396626	2236	14
47	5847217	2360	5987906	2330	6126772	2299	6263771	2267	6398862	2235	13
48	5849577	2359	5990236	2329	6129071	2298	6266038	2267	6401097	2235	12
49	5851936	2358	5992565	2328	6131369	2297	6268305	2266	6403332	2234	11
50	5854294	2358	5994893	2328	6133666	2298	6270571	2266	6405566	2233	10
51	5856652	2358	5997221	2328	6135964	2296	6272837	2265	6407799	2233	9
52	5859010	2357	5999549	2327	6138260	2296	6275102	2264	6410032	2232	8
53	5861367	2357	6001876	2326	6140556	2296	6277366	2265	6412264	2232	7
54	5863724	2356	6004202	2326	6142852	2295	6279631	2263	6414496	2232	6
55	5866080	2355	6006528	2326	6145147	2295	6281894	2263	6416728	2230	5
56	5868435	2355	6008854	2325	6147442	2294	6284157	2263	6418958	2231	4
57	5870790	2355	6011179	2324	6149736	2293	6286420	2262	6421189	2229	3
58	5873145	2354	6013503	2324	6152029	2293	6288682	2261	6423418	2229	2
59	5875499	2354	6015827	2323	6154322	2293	6290943	2261	6425647	2229	1
60	5877853	2353	6018150	2323	6156615	2292	6293204	2260	6427876	2228	0
'	54°	Diff.	53°	Diff.	52°	Diff.	51°	Diff.	50°	Diff.	'

′	40°	Diff.	41°	Diff.	42°	Diff.	43°	Diff.	44°	Diff.	′
0	6427876	2228	6560590	2195	6691306	2162	6819984	2127	6946584	2092	60
1	6430104	2228	6562785	2195	6693468	2160	6822111	2126	6948676	2091	59
2	6432332	2227	6564980	2194	6695628	2161	6824237	2126	6950767	2091	58
3	6434559	2226	6567174	2193	6697789	2159	6826363	2126	6952858	2091	57
4	6436785	2226	6569367	2193	6699948	2160	6828489	2124	6954949	2090	56
5	6439011	2225	6571560	2192	6702108	2158	6830613	2125	6957039	2089	55
6	6441236	2225	6573752	2192	6704266	2158	6832738	2123	6959128	2089	54
7	6443461	2224	6575944	2191	6706424	2158	6834861	2123	6961217	2088	53
8	6445685	2224	6578135	2191	6708582	2157	6836984	2123	6963305	2087	52
9	6447909	2223	6580326	2190	6710739	2156	6839107	2122	6965392	2087	51
10	6450132	2223	6582516	2190	6712895	2156	6841229	2121	6967479	2086	50
11	6452355	2222	6584706	2189	6715051	2155	6843350	2121	6969565	2086	49
12	6454577	2221	6586895	2188	6717206	2155	6845471	2120	6971651	2085	48
13	6456798	2221	6589083	2188	6719361	2154	6847591	2120	6973736	2085	47
14	6459019	2221	6591271	2187	6721515	2153	6849711	2119	6975821	2084	46
15	6461240	2220	6593458	2187	6723668	2153	6851830	2118	6977905	2083	45
16	6463460	2219	6595645	2186	6725821	2152	6853948	2118	6979988	2083	44
17	6465679	2219	6597831	2186	6727973	2152	6856066	2118	6982071	2082	43
18	6467898	2218	6600017	2185	6730125	2151	6858184	2116	6984153	2081	42
19	6470116	2218	6602202	2184	6732276	2151	6860300	2116	6986234	2081	41
20	6472334	2217	6604386	2184	6734427	2150	6862416	2116	6988315	2081	40
21	6474551	2216	6606570	2184	6736577	2150	6864532	2115	6990396	2080	39
22	6476767	2217	6608754	2182	6738727	2149	6866647	2114	6992476	2079	38
23	6478984	2215	6610936	2183	6740876	2148	6868761	2114	6994555	2078	37
24	6481199	2215	6613119	2181	6743024	2148	6870875	2113	6996633	2078	36
25	6483414	2214	6615300	2182	6745172	2147	6872988	2113	6998711	2078	35
26	6485628	2214	6617482	2180	6747319	2147	6875101	2112	7000789	2077	34
27	6487842	2214	6619662	2180	6749466	2146	6877213	2112	7002866	2076	33
28	6490056	2212	6621842	2180	6751612	2145	6879325	2110	7004942	2076	32
29	6492268	2212	6624022	2178	6753757	2145	6881435	2111	7007018	2075	31
30	6494480	2212	6626200	2179	6755902	2144	6883546	2109	7009093	2074	30
31	6496692	2211	6628379	2178	6758046	2144	6885655	2110	7011167	2074	29
32	6498903	2211	6630557	2177	6760190	2143	6887765	2108	7013241	2073	28
33	6501114	2210	6632734	2176	6762333	2143	6889873	2108	7015314	2073	27
34	6503324	2209	6634910	2177	6764476	2142	6891981	2108	7017387	2072	26
35	6505533	2209	6637087	2175	6766618	2142	6894089	2106	7019459	2072	25
36	6507742	2209	6639262	2175	6768760	2141	6896195	2107	7021531	2070	24
37	6509951	2207	6641437	2175	6770901	2140	6898302	2105	7023601	2071	23
38	6512158	2208	6643612	2173	6773041	2140	6900407	2105	7025672	2069	22
39	6514366	2206	6645785	2174	6775181	2139	6902512	2105	7027741	2070	21
40	6516572	2206	6647959	2172	6777320	2139	6904617	2104	7029811	2068	20
41	6518778	2206	6650131	2173	6779459	2138	6906721	2103	7031879	2068	19
42	6520984	2205	6652304	2171	6781597	2137	6908824	2103	7033947	2067	18
43	6523189	2205	6654475	2171	6783734	2137	6910927	2102	7036014	2067	17
44	6525394	2204	6656646	2171	6785871	2136	6913029	2102	7038081	2066	16
45	6527598	2203	6658817	2170	6788007	2136	6915131	2101	7040147	2066	15
46	6529801	2203	6660987	2169	6790143	2135	6917232	2100	7042213	2065	14
47	6532004	2202	6663156	2169	6792278	2135	6919332	2100	7044278	2064	13
48	6534206	2202	6665325	2168	6794413	2134	6921432	2099	7046342	2064	12
49	6536408	2201	6667493	2168	6796547	2134	6923531	2099	7048406	2063	11
50	6538609	2201	6669661	2167	6798681	2132	6925630	2098	7050469	2063	10
51	6540810	2200	6671828	2166	6800813	2133	6927728	2097	7052532	2062	9
52	6543010	2199	6673994	2166	6802946	2132	6929825	2097	7054594	2061	8
53	6545209	2199	6676160	2166	6805078	2131	6931922	2096	7056655	2061	7
54	6547408	2199	6678326	2164	6807209	2130	6934018	2096	7058716	2060	6
55	6549607	2197	6680490	2165	6809339	2130	6936114	2095	7060776	2059	5
56	6551804	2198	6682655	2163	6811469	2130	6938209	2095	7062835	2059	4
57	6554002	2196	6684818	2163	6813599	2129	6940304	2094	7064894	2059	3
58	6556198	2197	6686981	2163	6815728	2128	6942398	2093	7066953	2058	2
59	6558395	2195	6689144	2162	6817856	2128	6944491	2093	7069011	2057	1
60	6560590	2195	6691306	2162	6819984	2127	6946584	2092	7071068	2056	0
′	49°	Diff.	48°	Diff.	47°	Diff.	46°	Diff.	45°	Diff.	′

′	45°	Diff.	46°	Diff.	47°	Diff.	48°	Diff.	49°	Diff.	′
0	7071068	2056	7193398	2020	7313537	1984	7431448	1946	7547096	1908	60
1	7073124	2056	7195418	2020	7315521	1982	7433394	1946	7549004	1907	59
2	7075180	2056	7197438	2019	7317503	1983	7435340	1945	7550911	1907	58
3	7077236	2055	7199457	2019	7319486	1981	7437285	1944	7552818	1906	57
4	7079291	2054	7201476	2018	7321467	1982	7439229	1944	7554724	1906	56
5	7081345	2053	7203494	2017	7323449	1980	7441173	1942	7556630	1905	55
6	7083398	2053	7205511	2017	7325429	1980	7443115	1943	7558535	1904	54
7	7085451	2053	7207528	2016	7327409	1979	7445058	1941	7560439	1904	53
8	7087504	2052	7209544	2015	7329388	1979	7446999	1942	7562343	1903	52
9	7089556	2051	7211559	2015	7331367	1978	7448941	1940	7564246	1902	51
10	7091607	2050	7213574	2015	7333345	1977	7450881	1940	7566148	1902	50
11	7093657	2050	7215589	2013	7335322	1977	7452821	1939	7568050	1901	49
12	7095707	2050	7217602	2013	7337299	1976	7454760	1939	7569951	1900	48
13	7097757	2049	7219615	2013	7339275	1975	7456699	1937	7571851	1900	47
14	7099806	2048	7221628	2012	7341250	1975	7458636	1938	7573751	1899	46
15	7101854	2047	7223640	2011	7343225	1974	7460574	1936	7575650	1898	45
16	7103901	2047	7225651	2010	7345199	1974	7462510	1936	7577548	1898	44
17	7105948	2047	7227661	2010	7347173	1973	7464446	1936	7579446	1897	43
18	7107995	2046	7229671	2010	7349146	1972	7466382	1935	7581343	1897	42
19	7110041	2045	7231681	2009	7351118	1972	7468317	1934	7583240	1896	41
20	7112086	2044	7233690	2008	7353090	1971	7470251	1933	7585136	1895	40
21	7114130	2044	7235698	2007	7355061	1971	7472184	1933	7587031	1895	39
22	7116174	2044	7237705	2007	7357032	1970	7474117	1932	7588926	1894	38
23	7118218	2042	7239712	2007	7359002	1969	7476049	1932	7590820	1893	37
24	7120260	2043	7241719	2005	7360971	1969	7477981	1931	7592713	1893	36
25	7122303	2041	7243724	2005	7362940	1968	7479912	1930	7594606	1892	35
26	7124344	2041	7245729	2005	7364908	1967	7481842	1930	7596498	1891	34
27	7126385	2041	7247734	2004	7366875	1967	7483772	1929	7598389	1891	33
28	7128426	2039	7249738	2003	7368842	1966	7485701	1928	7600280	1890	32
29	7130465	2039	7251741	2003	7370808	1965	7487629	1928	7602170	1890	31
30	7132504	2039	7253744	2002	7372773	1965	7489557	1927	7604060	1889	30
31	7134543	2038	7255746	2001	7374738	1965	7491484	1927	7605949	1888	29
32	7136581	2037	7257747	2001	7376703	1963	7493411	1926	7607837	1887	28
33	7138618	2037	7259748	2000	7378666	1963	7495337	1925	7609724	1887	27
34	7140655	2036	7261748	2000	7380629	1963	7497262	1925	7611611	1886	26
35	7142691	2036	7263748	1999	7382592	1961	7499187	1924	7613497	1886	25
36	7144727	2035	7265747	1998	7384553	1962	7501111	1923	7615383	1885	24
37	7146762	2034	7267745	1998	7386515	1960	7503034	1923	7617268	1884	23
38	7148796	2034	7269743	1997	7388475	1960	7504957	1922	7619152	1884	22
39	7150830	2033	7271740	1996	7390435	1959	7506879	1921	7621036	1883	21
40	7152863	2032	7273736	1996	7392394	1959	7508800	1921	7622919	1883	20
41	7154895	2032	7275732	1996	7394353	1958	7510721	1920	7624802	1881	19
42	7156927	2032	7277728	1994	7396311	1957	7512641	1920	7626683	1881	18
43	7158959	2030	7279722	1994	7398268	1957	7514561	1919	7628564	1881	17
44	7160989	2030	7281716	1994	7400225	1956	7516480	1918	7630445	1880	16
45	7163019	2030	7283710	1993	7402181	1956	7518398	1918	7632325	1879	15
46	7165049	2029	7285703	1992	7404137	1955	7520316	1917	7634204	1878	14
47	7167078	2028	7287695	1991	7406092	1954	7522233	1916	7636082	1878	13
48	7169106	2028	7289686	1991	7408046	1954	7524149	1916	7637960	1878	12
49	7171134	2027	7291677	1991	7410000	1953	7526065	1915	7639838	1876	11
50	7173161	2026	7293668	1989	7411953	1952	7527980	1914	7641714	1876	10
51	7175187	2026	7295657	1989	7413905	1952	7529894	1914	7643590	1875	9
52	7177213	2025	7297646	1989	7415857	1951	7531808	1913	7645465	1875	8
53	7179238	2025	7299635	1988	7417808	1950	7533721	1913	7647340	1874	7
54	7181263	2024	7301623	1987	7419758	1950	7535634	1912	7649214	1873	6
55	7183287	2023	7303610	1987	7421708	1950	7537546	1911	7651087	1873	5
56	7185310	2023	7305597	1986	7423658	1948	7539457	1911	7652960	1872	4
57	7187333	2022	7307583	1985	7425606	1948	7541368	1910	7654832	1872	3
58	7189355	2022	7309568	1985	7427554	1948	7543278	1909	7656704	1870	2
59	7191377	2021	7311553	1984	7429502	1946	7545187	1909	7658574	1870	1
60	7193398	2020	7313537	1984	7431448	1946	7547096	1908	7660444	1870	0
′	44°	Diff.	43°	Diff.	42°	Diff.	41°	Diff.	40°	Diff.	′

′	50°	Diff.	51°	Diff.	52°	Diff.	53°	Diff.	54°	Diff.	′
0	7660444	1870	7771460	1830	7880108	1790	7986355	1750	8090170	1709	60
1	7662314	1869	7773290	1830	7881898	1790	7988105	1750	8091879	1709	59
2	7664183	1868	7775120	1829	7883688	1789	7989855	1749	8093588	1708	58
3	7666051	1867	7776949	1828	7885477	1789	7991604	1748	8095296	1708	57
4	7667918	1867	7778777	1827	7887266	1788	7993352	1748	8097004	1706	56
5	7669785	1867	7780604	1827	7889054	1787	7995100	1747	8098710	1706	55
6	7671652	1865	7782431	1827	7890841	1786	7996847	1746	8100416	1706	54
7	7673517	1865	7784258	1826	7892627	1786	7998593	1745	8102122	1704	53
8	7675382	1864	7786084	1825	7894413	1785	8000338	1745	8103826	1704	52
9	7677246	1864	7787909	1824	7896198	1785	8002083	1744	8105530	1704	51
10	7679110	1863	7789733	1824	7897983	1784	8003827	1744	8107234	1702	50
11	7680973	1862	7791557	1823	7899767	1783	8005571	1743	8108936	1702	49
12	7682835	1862	7793380	1822	7901550	1783	8007314	1742	8110638	1701	48
13	7684697	1861	7795202	1822	7903333	1782	8009056	1741	8112339	1701	47
14	7686558	1860	7797024	1821	7905115	1781	8010797	1741	8114040	1700	46
15	7688418	1860	7798845	1820	7906896	1780	8012538	1740	8115740	1699	45
16	7690278	1859	7800665	1820	7908676	1780	8014278	1740	8117439	1698	44
17	7692137	1859	7802485	1819	7910456	1779	8016018	1738	8119137	1698	43
18	7693996	1857	7804304	1819	7912235	1779	8017756	1739	8120835	1697	42
19	7695853	1857	7806123	1817	7914014	1778	8019495	1737	8122532	1697	41
20	7697710	1857	7807940	1817	7915792	1777	8021232	1737	8124229	1696	40
21	7699567	1856	7809757	1817	7917569	1776	8022969	1736	8125925	1695	39
22	7701423	1855	7811574	1816	7919345	1776	8024705	1735	8127620	1694	38
23	7703278	1854	7813390	1815	7921121	1775	8026440	1735	8129314	1694	37
24	7705132	1854	7815205	1814	7922896	1775	8028175	1734	8131008	1693	36
25	7706986	1854	7817019	1814	7924671	1774	8029909	1733	8132701	1692	35
26	7708840	1852	7818833	1813	7926445	1773	8031642	1733	8134393	1691	34
27	7710692	1852	7820646	1813	7928218	1772	8033375	1732	8136084	1691	33
28	7712544	1851	7822459	1811	7929990	1772	8035107	1731	8137775	1691	32
29	7714395	1851	7824270	1812	7931762	1771	8036838	1731	8139466	1689	31
30	7716246	1850	7826082	1810	7933533	1771	8038569	1730	8141155	1689	30
31	7718096	1849	7827892	1810	7935304	1770	8040299	1729	8142844	1688	29
32	7719945	1849	7829702	1809	7937074	1769	8042028	1728	8144532	1688	28
33	7721794	1848	7831511	1809	7938843	1768	8043756	1728	8146220	1686	27
34	7723642	1847	7833320	1807	7940611	1768	8045484	1727	8147906	1687	26
35	7725489	1847	7835127	1808	7942379	1767	8047211	1727	8149593	1685	25
36	7727336	1846	7836935	1806	7944146	1767	8048938	1726	8151278	1685	24
37	7729182	1845	7838741	1806	7945913	1765	8050664	1725	8152963	1684	23
38	7731027	1845	7840547	1805	7947678	1766	8052389	1724	8154647	1683	22
39	7732872	1844	7842352	1805	7949444	1764	8054113	1724	8156330	1683	21
40	7734716	1843	7844157	1804	7951208	1764	8055837	1723	8158013	1682	20
41	7736559	1843	7845961	1803	7952972	1763	8057560	1723	8159695	1681	19
42	7738402	1842	7847764	1802	7954735	1762	8059283	1722	8161376	1680	18
43	7740244	1842	7849566	1802	7956497	1762	8061005	1721	8163056	1680	17
44	7742086	1840	7851368	1801	7958259	1761	8062726	1720	8164736	1680	16
45	7743926	1841	7853169	1801	7960020	1760	8064446	1720	8166416	1678	15
46	7745767	1839	7854970	1800	7961780	1760	8066166	1719	8168094	1678	14
47	7747606	1839	7856770	1799	7963540	1759	8067885	1718	8169772	1677	13
48	7749445	1838	7858569	1798	7965299	1759	8069603	1718	8171449	1676	12
49	7751283	1838	7860367	1798	7967058	1757	8071321	1717	8173125	1676	11
50	7753121	1836	7862165	1798	7968815	1757	8073038	1716	8174801	1675	10
51	7754957	1837	7863963	1796	7970572	1757	8074754	1716	8176476	1675	9
52	7756794	1835	7865759	1796	7972329	1755	8076470	1715	8178151	1673	8
53	7758629	1835	7867555	1795	7974084	1755	8078185	1714	8179824	1673	7
54	7760464	1834	7869350	1795	7975839	1755	8079899	1713	8181497	1672	6
55	7762298	1834	7871145	1794	7977594	1753	8081612	1713	8183169	1672	5
56	7764132	1833	7872939	1793	7979347	1753	8083325	1712	8184841	1671	4
57	7765965	1832	7874732	1792	7981100	1753	8085037	1712	8186512	1670	3
58	7767797	1832	7876524	1792	7982853	1751	8086749	1711	8188182	1670	2
59	7769629	1831	7878316	1792	7984604	1751	8088460	1710	8189852	1668	1
60	7771460	1830	7880108	1790	7986355	1750	8090170	1709	8191520	1669	0
′	39°	Diff.	38°	Diff.	37°	Diff.	36°	Diff.	35°	Diff.	′

′	55°	Diff.	56°	Diff.	57°	Diff.	58°	Diff.	59°	Diff.	′
0	8191520	1669	8290376	1626	8386706	1584	8480481	1541	8571673	1498	60
1	8193189	1667	8292002	1626	8388290	1583	8482022	1540	8573171	1497	59
2	8194856	1667	8293628	1624	8389873	1582	8483562	1540	8574668	1496	58
3	8196523	1666	8295252	1625	8391455	1582	8485102	1539	8576164	1496	57
4	8198189	1665	8296877	1623	8393037	1581	8486641	1538	8577660	1495	56
5	8199854	1665	8298500	1623	8394618	1581	8488179	1538	8579155	1494	55
6	8201519	1664	8300123	1622	8396199	1579	8489717	1537	8580649	1494	54
7	8203183	1663	8301745	1621	8397778	1579	8491254	1536	8582143	1492	53
8	8204846	1663	8303366	1621	8399357	1579	8492790	1535	8583635	1492	52
9	8206509	1661	8304987	1620	8400936	1577	8494325	1535	8585127	1492	51
10	8208170	1662	8306607	1619	8402513	1577	8495860	1534	8586619	1490	50
11	8209832	1660	8308226	1619	8404090	1576	8497394	1533	8588109	1490	49
12	8211492	1660	8309845	1618	8405666	1575	8498927	1532	8589599	1489	48
13	8213152	1659	8311463	1617	8407241	1575	8500459	1532	8591088	1488	47
14	8214811	1658	8313080	1616	8408816	1574	8501991	1531	8592576	1488	46
15	8216469	1658	8314696	1616	8410390	1573	8503522	1531	8594064	1487	45
16	8218127	1657	8316312	1615	8411963	1573	8505053	1529	8595551	1486	44
17	8219784	1656	8317927	1614	8413536	1572	8506582	1529	8597037	1486	43
18	8221440	1656	8319541	1614	8415108	1571	8508111	1528	8598523	1484	42
19	8223096	1655	8321155	1613	8416679	1570	8509639	1528	8600007	1484	41
20	8224751	1654	8322768	1612	8418249	1570	8511167	1526	8601491	1484	40
21	8226405	1654	8324380	1611	8419819	1569	8512693	1526	8602975	1482	39
22	8228059	1653	8325991	1611	8421388	1568	8514219	1526	8604457	1482	38
23	8229712	1652	8327602	1610	8422956	1568	8515745	1524	8605939	1481	37
24	8231364	1651	8329212	1610	8424524	1567	8517269	1524	8607420	1481	36
25	8233015	1651	8330822	1608	8426091	1566	8518793	1523	8608901	1479	35
26	8234666	1650	8332430	1608	8427657	1565	8520316	1523	8610380	1479	34
27	8236316	1649	8334038	1608	8429222	1565	8521839	1521	8611859	1478	33
28	8237965	1649	8335646	1606	8430787	1564	8523360	1521	8613337	1478	32
29	8239614	1648	8337252	1606	8432351	1563	8524881	1521	8614815	1477	31
30	8241262	1647	8338858	1605	8433914	1563	8526402	1519	8616292	1476	30
31	8242909	1647	8340463	1605	8435477	1562	8527921	1519	8617768	1475	29
32	8244556	1646	8342068	1604	8437039	1561	8529440	1518	8619243	1474	28
33	8246202	1645	8343672	1603	8438600	1561	8530958	1517	8620717	1474	27
34	8247847	1644	8345275	1602	8440161	1559	8532475	1517	8622191	1473	26
35	8249491	1644	8346877	1602	8441720	1559	8533992	1516	8623664	1473	25
36	8251135	1643	8348479	1601	8443279	1559	8535508	1515	8625137	1471	24
37	8252778	1642	8350080	1600	8444838	1557	8537023	1515	8626608	1471	23
38	8254420	1642	8351680	1599	8446395	1557	8538538	1513	8628079	1470	22
39	8256062	1641	8353279	1599	8447952	1556	8540051	1513	8629549	1470	21
40	8257703	1640	8354878	1598	8449508	1556	8541564	1513	8631019	1469	20
41	8259343	1640	8356476	1598	8451064	1554	8543077	1511	8632488	1468	19
42	8260983	1639	8358074	1596	8452618	1554	8544588	1511	8633956	1467	18
43	8262622	1638	8359670	1596	8454172	1554	8546099	1510	8635423	1466	17
44	8264260	1637	8361266	1596	8455726	1552	8547609	1510	8636889	1466	16
45	8265897	1637	8362862	1594	8457278	1552	8549119	1508	8638355	1465	15
46	8267534	1636	8364456	1594	8458830	1551	8550627	1508	8639820	1464	14
47	8269170	1636	8366050	1593	8460381	1551	8552135	1508	8641284	1464	13
48	8270806	1634	8367643	1593	8461932	1549	8553643	1506	8642748	1463	12
49	8272440	1634	8369236	1591	8463481	1549	8555149	1506	8644211	1462	11
50	8274074	1634	8370827	1591	8465030	1549	8556655	1505	8645673	1461	10
51	8275708	1632	8372418	1591	8466579	1547	8558160	1504	8647134	1461	9
52	8277340	1632	8374009	1589	8468126	1547	8559664	1504	8648595	1460	8
53	8278972	1631	8375598	1589	8469673	1546	8561168	1503	8650055	1459	7
54	8280603	1631	8377187	1588	8471219	1546	8562671	1502	8651514	1459	6
55	8282234	1630	8378775	1588	8472765	1544	8564173	1501	8652973	1457	5
56	8283864	1629	8380363	1587	8474309	1544	8565674	1501	8654430	1457	4
57	8285493	1628	8381950	1586	8475853	1544	8567175	1500	8655887	1457	3
58	8287121	1628	8383536	1585	8477397	1542	8568675	1499	8657344	1455	2
59	8288749	1627	8385121	1585	8478939	1542	8570174	1499	8658799	1455	1
60	8290376	1626	8386706	1584	8480481	1541	8571673	1498	8660254	1454	0
′	34°	Diff.	33°	Diff.	32°	Diff.	31°	Diff.	30°	Diff.	′

′	60°	Diff.	61°	Diff.	62°	Diff.	63°	Diff.	64°	Diff.	′
0	8660254	1454	8746197	1410	8829476	1365	8910065	1320	8987940	1275	60
1	8661708	1453	8747607	1409	8830841	1365	8911385	1320	8989215	1274	59
2	8663161	1453	8749016	1409	8832206	1363	8912705	1319	8990489	1274	58
3	8664614	1452	8750425	1407	8833569	1364	8914024	1318	8991763	1272	57
4	8666066	1451	8751832	1407	8834933	1362	8915342	1317	8993035	1272	56
5	8667517	1450	8753239	1406	8836295	1361	8916659	1316	8994307	1271	55
6	8668967	1450	8754645	1406	8837656	1361	8917975	1316	8995578	1270	54
7	8670417	1449	8756051	1404	8839017	1360	8919291	1315	8996848	1269	53
8	8671866	1448	8757455	1404	8840377	1359	8920606	1314	8998117	1269	52
9	8673314	1448	8758859	1404	8841736	1359	8921920	1314	8999386	1268	51
10	8674762	1447	8760263	1402	8843095	1358	8923234	1312	9000654	1267	50
11	8676209	1446	8761665	1402	8844453	1357	8924546	1312	9001921	1267	49
12	8677655	1445	8763067	1401	8845810	1356	8925858	1311	9003188	1265	48
13	8679100	1444	8764468	1400	8847166	1356	8927169	1311	9004453	1265	47
14	8680544	1444	8765868	1400	8848522	1354	8928480	1309	9005718	1264	46
15	8681988	1443	8767268	1398	8849876	1354	8929789	1309	9006982	1264	45
16	8683431	1443	8768666	1398	8851230	1354	8931098	1308	9008246	1262	44
17	8684874	1441	8770064	1398	8852584	1352	8932406	1308	9009508	1262	43
18	8686315	1441	8771462	1396	8853936	1352	8933714	1307	9010770	1261	42
19	8687756	1440	8772858	1396	8855288	1351	8935021	1305	9012031	1261	41
20	8689196	1440	8774254	1395	8856639	1350	8936326	1306	9013292	1259	40
21	8690636	1438	8775649	1394	8857989	1350	8937632	1304	9014551	1259	39
22	8692074	1438	8777043	1394	8859339	1349	8938936	1304	9015810	1258	38
23	8693512	1437	8778437	1393	8860688	1348	8940240	1302	9017068	1257	37
24	8694949	1437	8779830	1392	8862036	1347	8941542	1302	9018325	1257	36
25	8696386	1435	8781222	1391	8863383	1347	8942844	1302	9019582	1256	35
26	8697821	1435	8782613	1391	8864730	1345	8944146	1300	9020838	1254	34
27	8699256	1435	8784004	1390	8866075	1345	8945446	1300	9022092	1255	33
28	8700691	1433	8785394	1389	8867420	1345	8946746	1299	9023347	1253	32
29	8702124	1433	8786783	1388	8868765	1343	8948045	1299	9024600	1253	31
30	8703557	1432	8788171	1388	8870108	1343	8949344	1297	9025853	1252	30
31	8704989	1431	8789559	1387	8871451	1342	8950641	1297	9027105	1251	29
32	8706420	1431	8790946	1386	8872793	1341	8951938	1296	9028356	1250	28
33	8707851	1430	8792332	1385	8874134	1341	8953234	1295	9029606	1250	27
34	8709281	1429	8793717	1385	8875475	1340	8954529	1295	9030856	1249	26
35	8710710	1428	8795102	1384	8876815	1339	8955824	1294	9032105	1248	25
36	8712138	1428	8796486	1383	8878154	1338	8957118	1293	9033353	1247	24
37	8713566	1427	8797869	1382	8879492	1338	8958411	1292	9034600	1247	23
38	8714993	1426	8799251	1382	8880830	1336	8959703	1291	9035847	1246	22
39	8716419	1425	8800633	1381	8882166	1337	8960994	1291	9037093	1245	21
40	8717844	1425	8802014	1380	8883503	1335	8962285	1290	9038338	1244	20
41	8719269	1424	8803394	1380	8884838	1334	8963575	1289	9039582	1243	19
42	8720693	1423	8804774	1378	8886172	1334	8964864	1289	9040825	1243	18
43	8722116	1422	8806152	1378	8887506	1333	8966153	1287	9042068	1242	17
44	8723538	1422	8807530	1377	8888839	1332	8967440	1287	9043310	1241	16
45	8724960	1421	8808907	1377	8890171	1332	8968727	1287	9044551	1241	15
46	8726381	1420	8810284	1376	8891503	1331	8970014	1285	9045792	1240	14
47	8727801	1420	8811660	1375	8892834	1330	8971299	1285	9047032	1239	13
48	8729221	1419	8813035	1374	8894164	1329	8972584	1284	9048271	1238	12
49	8730640	1418	8814409	1373	8895493	1329	8973868	1283	9049509	1237	11
50	8732058	1417	8815782	1373	8896822	1327	8975151	1282	9050746	1237	10
51	8733475	1416	8817155	1372	8898149	1327	8976433	1282	9051983	1236	9
52	8734891	1416	8818527	1371	8899476	1327	8977715	1281	9053219	1235	8
53	8736307	1415	8819898	1371	8900803	1325	8978996	1280	9054454	1234	7
54	8737722	1415	8821269	1370	8902128	1325	8980276	1279	9055688	1234	6
55	8739137	1413	8822638	1369	8903453	1324	8981555	1279	9056922	1232	5
56	8740550	1413	8824007	1369	8904777	1323	8982834	1278	9058154	1232	4
57	8741963	1412	8825376	1367	8906100	1323	8984112	1277	9059386	1232	3
58	8743375	1411	8826743	1367	8907423	1321	8985389	1276	9060618	1230	2
59	8744786	1411	8828110	1366	8908744	1321	8986665	1275	9061848	1230	1
60	8746197	1410	8829476	1365	8910065	1320	8987940	1275	9063078	1229	0
′	29°	Diff.	28°	Diff.	27°	Diff.	26°	Diff.	25°	Diff.	′

′	65°	Diff.	66°	Diff.	67°	Diff.	68°	Diff.	69°	Diff.	′
0	9063078	1229	9135455	1182	9205049	1136	9271839	1089	9335804	1042	60
1	9064307	1228	9136637	1182	9206185	1135	9272928	1088	9336846	1042	59
2	9065535	1227	9137819	1182	9207320	1135	9274016	1088	9337888	1040	58
3	9066762	1227	9139001	1180	9208455	1134	9275104	1087	9338928	1040	57
4	9067989	1226	9140181	1180	9209589	1133	9276191	1086	9339968	1039	56
5	9069215	1225	9141361	1179	9210722	1132	9277277	1086	9341007	1038	55
6	9070440	1225	9142540	1178	9211854	1132	9278363	1084	9342045	1037	54
7	9071665	1223	9143718	1177	9212986	1130	9279447	1084	9343082	1037	53
8	9072888	1223	9144895	1177	9214116	1130	9280531	1083	9344119	1035	52
9	9074111	1222	9146072	1175	9215246	1129	9281614	1082	9345154	1035	51
10	9075333	1221	9147247	1175	9216375	1129	9282696	1082	9346189	1034	50
11	9076554	1221	9148422	1175	9217504	1128	9283778	1080	9347223	1034	49
12	9077775	1220	9149597	1173	9218632	1126	9284858	1080	9348257	1032	48
13	9078995	1219	9150770	1173	9219758	1126	9285938	1079	9349289	1032	47
14	9080214	1218	9151943	1172	9220884	1126	9287017	1079	9350321	1031	46
15	9081432	1217	9153115	1171	9222010	1124	9288096	1077	9351352	1030	45
16	9082649	1217	9154286	1170	9223134	1124	9289173	1077	9352382	1030	44
17	9083866	1216	9155456	1170	9224258	1123	9290250	1076	9353412	1028	43
18	9085082	1215	9156626	1169	9225381	1122	9291326	1075	9354440	1028	42
19	9086297	1214	9157795	1168	9226503	1121	9292401	1074	9355468	1027	41
20	9087511	1214	9158963	1167	9227624	1121	9293475	1074	9356495	1026	40
21	9088725	1213	9160130	1167	9228745	1120	9294549	1073	9357521	1026	39
22	9089938	1212	9161297	1165	9229865	1119	9295622	1072	9358547	1024	38
23	9091150	1211	9162462	1165	9230984	1118	9296694	1071	9359571	1024	37
24	9092361	1211	9163627	1164	9232102	1118	9297765	1070	9360595	1023	36
25	9093572	1209	9164791	1164	9233220	1116	9298835	1070	9361618	1023	35
26	9094781	1209	9165955	1163	9234336	1116	9299905	1069	9362641	1021	34
27	9095990	1209	9167118	1161	9235452	1115	9300974	1068	9363662	1021	33
28	9097199	1207	9168279	1161	9236567	1115	9302042	1067	9364683	1020	32
29	9098406	1207	9169440	1161	9237682	1113	9303109	1067	9365703	1019	31
30	9099613	1206	9170601	1159	9238795	1113	9304176	1065	9366722	1018	30
31	9100819	1205	9171760	1159	9239908	1112	9305241	1065	9367740	1018	29
32	9102024	1204	9172919	1158	9241020	1111	9306306	1064	9368758	1016	28
33	9103228	1204	9174077	1157	9242131	1111	9307370	1064	9369774	1016	27
34	9104432	1203	9175234	1157	9243242	1109	9308434	1062	9370790	1016	26
35	9105635	1202	9176391	1155	9244351	1109	9309496	1062	9371806	1014	25
36	9106837	1201	9177546	1155	9245460	1108	9310558	1061	9372820	1013	24
37	9108038	1200	9178701	1154	9246568	1108	9311619	1060	9373833	1013	23
38	9109238	1200	9179855	1154	9247676	1106	9312679	1060	9374846	1012	22
39	9110438	1199	9181009	1152	9248782	1106	9313739	1058	9375858	1011	21
40	9111637	1198	9182161	1152	9249888	1105	9314797	1058	9376869	1011	20
41	9112835	1198	9183313	1151	9250993	1104	9315855	1057	9377880	1009	19
42	9114033	1196	9184464	1150	9252097	1104	9316912	1057	9378889	1009	18
43	9115229	1196	9185614	1149	9253201	1102	9317969	1055	9379898	1008	17
44	9116425	1195	9186763	1149	9254303	1102	9319024	1055	9380906	1007	16
45	9117620	1195	9187912	1148	9255405	1101	9320079	1054	9381913	1007	15
46	9118815	1193	9189060	1147	9256506	1100	9321133	1053	9382920	1005	14
47	9120008	1193	9190207	1146	9257606	1100	9322186	1052	9383925	1005	13
48	9121201	1192	9191353	1146	9258706	1099	9323238	1052	9384930	1004	12
49	9122393	1191	9192499	1145	9259805	1097	9324290	1050	9385934	1004	11
50	9123584	1191	9193644	1144	9260902	1098	9325340	1050	9386938	1002	10
51	9124775	1190	9194788	1143	9262000	1096	9326390	1049	9387940	1002	9
52	9125965	1189	9195931	1142	9263096	1096	9327439	1049	9388942	1000	8
53	9127154	1188	9197073	1142	9264192	1094	9328488	1047	9389943	1001	7
54	9128342	1187	9198215	1141	9265286	1094	9329535	1047	9390943	999	6
55	9129529	1187	9199356	1140	9266380	1094	9330582	1046	9391942	998	5
56	9130716	1186	9200496	1139	9267474	1092	9331628	1045	9392940	998	4
57	9131902	1185	9201635	1139	9268566	1092	9332673	1045	9393938	997	3
58	9133087	1184	9202774	1138	9269658	1090	9333718	1043	9394935	996	2
59	9134271	1184	9203912	1137	9270748	1091	9334761	1043	9395931	995	1
60	9135455	1182	9205049	1136	9271839	1089	9335804	1042	9396926	995	0
′	24°	Diff.	23°	Diff.	22°	Diff.	21°	Diff.	20°	Diff.	′

NATURAL COSINES.

′	70°	Diff.	71°	Diff.	72°	Diff.	73°	Diff.	74°	Diff.	′
0	9396926	995	9455186	946	9510565	899	9563048	850	9612617	801	60
1	9397921	993	9456132	946	9511464	897	9563898	849	9613418	801	59
2	9398914	993	9457078	945	9512361	897	9564747	848	9614219	800	58
3	9399907	992	9458023	945	9513258	896	9565595	848	9615019	799	57
4	9400899	992	9458968	943	9514154	896	9566443	847	9615818	798	56
5	9401891	990	9459911	943	9515050	894	9567290	846	9616616	797	55
6	9402881	990	9460854	941	9515944	894	9568136	845	9617413	797	54
7	9403871	989	9461795	941	9516838	893	9568981	844	9618210	795	53
8	9404860	988	9462736	941	9517731	892	9569825	844	9619005	795	52
9	9405848	987	9463677	939	9518623	891	9570669	843	9619800	794	51
10	9406835	987	9464616	939	9519514	890	9571512	842	9620594	793	50
11	9407822	986	9465555	938	9520404	890	9572354	841	9621387	793	49
12	9408808	985	9466493	937	9521294	889	9578195	840	9622180	792	48
13	9409793	984	9467430	936	9522183	888	9574035	840	9622972	790	47
14	9410777	983	9468366	935	9523071	887	9574875	839	9623762	790	46
15	9411760	983	9469301	935	9523958	886	9575714	838	9624552	790	45
16	9412743	981	9470236	934	9524844	886	9576552	837	9625342	788	44
17	9413724	981	9471170	933	9525730	885	9577389	836	9626130	787	43
18	9414705	981	9472103	932	9526615	884	9578225	835	9626917	787	42
19	9415686	979	9473035	931	9527499	883	9579060	835	9627704	786	41
20	9416665	979	9473966	931	9528382	882	9579895	834	9628490	785	40
21	9417644	977	9474897	930	9529264	882	9580729	833	9629275	785	39
22	9418621	977	9475827	929	9530146	881	9581562	832	9630060	783	38
23	9419598	977	9476756	928	9531027	880	9582394	832	9630843	783	37
24	9420575	975	9477684	928	9531907	879	9583226	830	9631626	782	36
25	9421550	975	9478612	926	9532786	878	9584056	830	9632408	781	35
26	9422525	973	9479538	926	9533664	878	9584886	829	9633189	780	34
27	9423498	973	9480464	925	9534542	876	9585715	828	9633969	779	33
28	9424471	973	9481389	924	9535418	876	9586543	828	9634748	779	32
29	9425444	971	9482313	924	9536294	876	9587371	826	9635527	778	31
30	9426415	971	9483237	922	9537170	874	9588197	826	9636305	776	30
31	9427386	969	9484159	922	9538044	873	9589023	825	9637081	777	29
32	9428355	969	9485081	921	9538917	873	9589848	824	9637858	775	28
33	9429324	969	9486002	920	9539790	872	9590672	824	9638633	774	27
34	9430293	967	9486922	920	9540662	871	9591496	822	9639407	774	26
35	9431260	967	9487842	918	9541533	870	9592318	822	9640181	773	25
36	9432227	965	9488760	918	9542403	870	9593140	821	9640954	772	24
37	9433192	965	9489678	917	9543273	868	9593961	820	9641726	771	23
38	9434157	965	9490595	916	9544141	868	9594781	819	9642497	771	22
39	9435122	963	9491511	915	9545009	867	9595600	818	9643268	769	21
40	9436085	963	9492426	915	9545876	867	9596418	818	9644037	769	20
41	9437048	962	9493341	914	9546743	865	9597236	817	9644806	768	19
42	9438010	961	9494255	913	9547608	865	9598053	816	9645574	767	18
43	9438971	960	9495168	912	9548473	863	9598869	815	9646341	767	17
44	9439931	959	9496080	911	9549336	863	9599684	815	9647108	765	16
45	9440890	959	9496991	911	9550199	863	9600499	813	9647873	765	15
46	9441849	958	9497902	910	9551062	861	9601312	813	9648638	764	14
47	9442807	957	9498812	909	9551923	861	9602125	812	9649402	763	13
48	9443764	956	9499721	908	9552784	859	9602937	811	9650165	762	12
49	9444720	955	9500629	907	9553643	859	9603748	810	9650927	762	11
50	9445675	955	9501536	907	9554502	859	9604558	810	9651689	760	10
51	9446630	954	9502443	905	9555361	857	9605368	809	9652449	760	9
52	9447584	953	9503348	905	9556218	856	9606177	807	9653209	759	8
53	9448537	952	9504253	904	9557074	856	9606984	808	9653968	758	7
54	9449489	952	9505157	904	9557930	855	9607792	806	9654726	758	6
55	9450441	950	9506061	902	9558785	854	9608598	805	9655484	756	5
56	9451391	950	9506963	902	9559639	853	9609403	805	9656240	756	4
57	9452341	949	9507865	901	9560492	853	9610208	804	9656996	755	3
58	9453290	948	9508766	900	9561345	852	9611012	803	9657751	754	2
59	9454238	948	9509666	899	9562197	851	9611815	802	9658505	753	1
60	9455186	946	9510565	899	9563048	850	9612617	801	9659258	753	0
′	19°	Diff.	18°	Diff.	17°	Diff.	16°	Diff.	15°	Diff.	′

′	75°	Diff.	76°	Diff.	77°	Diff.	78°	Diff.	79°	Diff.	′
0	9659258	758	9702957	704	9743701	654	9781476	604	9816272	554	60
1	9660011	751	9703660	702	9744355	653	9782080	604	9816826	554	59
2	9660762	751	9704363	702	9745008	652	9782684	603	9817380	553	58
3	9661513	750	9705065	701	9745660	651	9783287	602	9817933	552	57
4	9662263	749	9705766	700	9746311	651	9783889	601	9818485	552	56
5	9663012	749	9706466	699	9746962	650	9784490	600	9819037	550	55
6	9663761	747	9707165	698	9747612	649	9785090	599	9819587	550	54
7	9664508	747	9707863	698	9748261	648	9785689	599	9820137	549	53
8	9665255	746	9708561	697	9748909	647	9786288	598	9820686	548	52
9	9666001	745	9709258	695	9749556	647	9786886	597	9821234	547	51
10	9666746	744	9709953	696	9750203	646	9787483	596	9821781	546	50
11	9667490	744	9710649	694	9750849	645	9788079	595	9822327	546	49
12	9668234	743	9711343	693	9751494	644	9788674	594	9822873	544	48
13	9668977	741	9712036	693	9752138	643	9789268	594	9823417	544	47
14	9669718	741	9712729	692	9752781	642	9789862	593	9823961	543	46
15	9670459	741	9713421	691	9753423	642	9790455	592	9824504	542	45
16	9671200	739	9714112	690	9754065	641	9791047	591	9825046	541	44
17	9671939	739	9714802	689	9754706	639	9791638	590	9825587	541	43
18	9672678	737	9715491	689	9755345	640	9792228	590	9826128	540	42
19	9673415	737	9716180	687	9755985	638	9792818	588	9826668	538	41
20	9674152	736	9716867	687	9756623	637	9793406	588	9827206	538	40
21	9674888	736	9717554	686	9757260	637	9793994	587	9827744	538	39
22	9675624	734	9718240	686	9757897	636	9794581	586	9828282	536	38
23	9676358	734	9718926	684	9758533	635	9795167	585	9828818	535	37
24	9677092	733	9719610	684	9759168	634	9795752	585	9829353	535	36
25	9677825	732	9720294	682	9759802	633	9796337	584	9829888	534	35
26	9678557	731	8720976	682	9760435	633	9796921	583	9830422	533	34
27	9679288	730	9721658	681	9761067	631	9797504	582	9830955	532	33
28	9680018	730	9722339	681	9761699	631	9798086	581	9831487	532	32
29	9680748	728	9723020	679	9762330	630	9798667	580	9832019	530	31
30	9681476	728	9723699	679	9762960	629	9799247	580	9832549	530	30
31	9682204	727	9724378	678	9763589	629	9799827	578	9833079	529	29
32	9682931	727	9725056	677	9764217	627	9800405	578	9833608	528	28
33	9683658	725	9725733	676	9764845	627	9800983	577	9834136	527	27
34	9684383	725	9726409	675	9765472	626	9801560	576	9834663	526	26
35	9685108	724	9727084	675	9766098	625	9802136	576	9835189	526	25
36	9685832	723	9727759	673	9766723	624	9802712	574	9835715	524	24
37	9686555	722	9728432	673	9767347	623	9803286	574	9836239	524	23
38	9687277	721	9729105	672	9767970	623	9803860	573	9836763	523	22
39	9687998	721	9729777	672	9768593	622	9804433	572	9837286	522	21
40	9688719	719	9730449	670	9769215	621	9805005	571	9837808	522	20
41	9689438	719	9731119	670	9769836	620	9805576	571	9838330	520	19
42	9690157	718	9731789	669	9770456	619	9806147	569	9838850	520	18
43	9690875	718	9732457	667	9771075	618	9806716	569	9839370	519	17
44	9691593	716	9733125	668	9771693	618	9807285	568	9839889	518	16
45	9692309	716	9733392	666	9772311	617	9807853	567	9840407	517	15
46	9693025	715	9734458	665	9772928	616	9808420	566	9840924	517	14
47	9693740	713	9735124	665	9773544	615	9808986	566	9841441	515	13
48	9694453	714	9735789	664	9774159	614	9809552	564	9841956	515	12
49	9695167	712	9736453	663	9774773	614	9810116	564	9842471	514	11
50	9695879	712	9737116	662	9775386	612	9810080	563	9842985	513	10
51	9696591	710	9737778	661	9775999	612	9811243	562	9843498	512	9
52	9697301	710	9738439	661	9776611	611	9811805	561	9844010	511	8
53	9698011	709	9739100	660	9777222	610	9812366	561	9844521	511	7
54	9698720	708	9739760	659	9777832	610	9812927	559	9845032	510	6
55	9699428	708	9740419	658	9778441	608	9813486	559	9845542	508	5
56	9700135	706	9741077	657	9779050	608	9814045	558	9846050	508	4
57	9700842	706	9741734	656	9779658	607	9814603	557	9846558	508	3
58	9701548	705	9742390	656	9780265	606	9815160	556	9847066	506	2
59	9702253	704	9743046	655	9780871	605	9815716	556	9847572	506	1
60	9702957	704	9743701	654	9781476	604	9816272	554	9848078	504	0
′	14°	Diff.	13°	Diff.	12°	Diff.	11°	Diff.	10°	Diff.	′

′	80°	Diff.	81°	Diff.	82°	Diff.	83°	Diff	84°	Diff.	′
0	9848078	504	9876883	455	9902681	404	9925462	354	9945219	304	60
1	9848582	504	9877338	454	9903085	404	9925816	353	9945523	302	59
2	9849086	503	9877792	453	9903489	402	9926169	352	9945825	302	58
3	9849589	502	9878245	452	9903891	402	9926521	352	9946127	301	57
4	9850091	502	9878697	451	9904293	401	9926873	351	9946428	301	56
5	9850593	500	9879148	451	9904694	401	9927224	349	9946729	299	55
6	9851093	500	9879599	449	9905095	399	9927573	349	9947028	299	54
7	9851593	499	9880048	449	9905494	399	9927922	349	9947327	298	53
8	9852092	498	9880497	448	9905893	397	9928271	347	9947625	296	52
9	9852590	497	9880945	447	9906290	397	9928618	347	9947921	296	51
10	9853087	496	9881392	446	9906687	396	9928965	345	9948217	296	50
11	9853583	496	9881838	446	9907083	395	9929310	345	9948513	294	49
12	9854079	495	9882284	444	9907478	395	9929655	344	9948807	294	48
13	9854574	494	9882728	444	9907873	393	9929999	343	9949101	292	47
14	9855068	493	9883172	443	9908266	393	9930342	343	9949393	292	46
15	9855561	492	9883615	442	9908659	392	9930685	341	9949685	291	45
16	9856053	491	9884057	441	9909051	391	9931026	341	9949976	290	44
17	9856544	491	9884498	441	9909442	390	9931367	339	9950266	290	43
18	9857035	489	9884939	439	9909832	389	9931706	339	9950556	288	42
19	9857524	489	9885378	439	9910221	389	9932045	339	9950844	288	41
20	9858013	488	9885817	438	9910610	387	9932384	337	9951132	287	40
21	9858501	487	9886255	437	9910997	387	9932721	336	9951419	286	39
22	9858988	487	9886692	436	9911384	386	9933057	336	9951705	285	38
23	9859475	485	9887128	436	9911770	385	9933393	335	9951990	284	37
24	9859960	485	9887564	434	9912155	385	9933728	334	9952274	283	36
25	9860445	484	9887998	434	9912540	383	9934062	333	9952557	283	35
26	9860929	483	9888432	433	9912923	383	9934395	332	9952840	282	34
27	9861412	482	9888865	432	9913306	382	9934727	331	9953122	281	33
28	9861894	481	9889297	431	9913688	381	9935058	331	9953403	280	32
29	9862375	481	9889728	431	9914069	380	9935389	330	9953683	279	31
30	9862856	480	9890159	429	9914449	379	9935719	328	9953962	278	30
31	9863336	479	9890588	429	9914828	378	9936047	328	9954240	278	29
32	9863815	478	9891017	428	9915206	378	9936375	328	9954517	277	28
33	9864293	477	9891445	427	9915584	377	9936703	326	9954794	275	27
34	9864770	476	9891872	426	9915961	376	9937029	326	9955070	275	26
35	9865246	476	9892298	425	9916337	375	9937355	324	9955345	275	25
36	9865722	474	9892723	425	9916712	374	9937679	324	9955620	273	24
37	9866196	474	9893148	424	9917086	373	9938003	323	9955892	272	23
38	9866670	473	9893572	422	9917459	373	9938326	322	9956165	272	22
39	9867143	472	9893994	422	9917832	372	9938648	321	9956437	271	21
40	9867615	472	9894416	422	9918204	370	9938969	321	9956708	270	20
41	9868087	470	9894838	420	9918574	370	9939290	320	9956978	269	19
42	9868557	470	9895258	419	9918944	370	9939610	318	9957247	268	18
43	9869027	469	9895677	419	9919314	368	9939928	318	9957515	268	17
44	9869496	468	9896096	418	9919682	367	9940246	317	9957783	266	16
45	9869964	467	9896514	417	9920049	367	9940563	317	9958049	266	15
46	9870431	466	9896931	416	9920416	366	9940880	315	9958315	265	14
47	9870897	466	9897347	415	9920782	365	9941195	315	9958580	264	13
48	9871363	464	9897762	415	9921147	364	9941510	313	9958844	263	12
49	9871827	464	9898177	413	9921511	363	9941823	313	9959107	263	11
50	9872291	463	9898590	413	9921874	363	9942136	312	9959370	261	10
51	9872754	462	9899003	412	9922237	362	9942448	312	9959631	261	9
52	9873216	462	9899415	411	9922599	360	9942760	310	9959892	260	8
53	9873678	460	9899826	411	9922959	360	9943070	309	9960152	259	7
54	9874138	460	9900237	409	9923319	360	9943379	309	9960411	258	6
55	9874598	459	9900646	409	9923679	358	9943688	308	9960669	257	5
56	9875057	457	9901055	407	9924037	357	9943996	307	9960926	257	4
57	9875514	458	9901462	407	9924394	357	9944303	306	9961183	255	3
58	9875972	456	9901869	406	9924751	356	9944609	305	9961438	255	2
59	9876428	455	9902275	406	9925107	355	9944914	305	9961693	254	1
60	9876883	455	9902681	404	9925462	354	9945219	304	9961947	253	0
′	9°	Diff.	8°	Diff.	7°	Diff.	6°	Diff.	5°	Diff.	′

NATURAL COSINES.

′	85°	Diff.	86°	Diff.	87°	Diff.	88°	Diff.	89°	Diff.	′
0	9961947	253	9975641	202	9986295	152	9993908	101	9998477	50	60
1	9962200	252	9975843	202	9986447	151	9994009	101	9998527	50	59
2	9962452	252	9976045	200	9986598	150	9994110	99	9998577	48	58
3	9962704	250	9976245	200	9986748	150	9994209	99	9998625	48	57
4	9962954	250	9976445	200	9986898	148	9994308	97	9998673	47	56
5	9963204	249	9976645	198	9987046	148	9994405	97	9998720	46	55
6	9963453	248	9976843	197	9987194	146	9994502	96	9998766	46	54
7	9963701	247	9977040	197	9987340	146	9994598	95	9998812	44	53
8	9963948	247	9977237	196	9987486	145	9994693	95	9998856	44	52
9	9964195	245	9977433	194	9987631	144	9994788	93	9998900	42	51
10	9964440	245	9977627	194	9987775	144	9994881	93	9998942	42	50
11	9964685	244	9977821	194	9987919	142	9994974	92	9998984	41	49
12	9964929	243	9978015	192	9988061	142	9995066	91	9999025	40	48
13	9965172	242	9978207	192	9988203	141	9995157	90	9999065	40	47
14	9965414	241	9978399	190	9988344	140	9995247	89	9999105	38	46
15	9965655	240	9978589	190	9988484	139	9995336	88	9999143	38	45
16	9965895	240	9978779	189	9988623	138	9995424	88	9999181	37	44
17	9966135	239	9978968	188	9988761	138	9995512	87	9999218	36	43
18	9966374	238	9979156	187	9988899	136	9995599	85	9999254	35	42
19	9966612	237	9979343	187	9989035	136	9995684	86	9999289	34	41
20	9966849	236	9979530	186	9989171	135	9995770	84	9999323	34	40
21	9967085	236	9979716	184	9989306	134	9995854	83	9999357	32	39
22	9967321	234	9979900	184	9989440	133	9995937	83	9999389	32	38
23	9967555	234	9980084	183	9989573	133	9996020	81	9999421	31	37
24	9967789	233	9980267	183	9989706	131	9996101	81	9999452	30	36
25	9968022	232	9980450	181	9989837	131	9996182	80	9999482	29	35
26	9968254	231	9980631	180	9989968	130	9996262	79	9999511	28	34
27	9968485	230	9980811	180	9990098	129	9996341	78	9999539	28	33
28	9968715	230	9980991	179	9990227	128	9996419	78	9999567	26	32
29	9968945	228	9981170	178	9990355	127	9996497	76	9999593	26	31
30	9969173	228	9981348	177	9990482	127	9996573	76	9999619	25	30
31	9969401	227	9981525	176	9990609	125	9996649	75	9999644	24	29
32	9969628	226	9981701	176	9990734	125	9996724	74	9999668	24	28
33	9969854	226	9981877	175	9990859	124	9996798	73	9999692	22	27
34	9970080	224	9982052	173	9990983	123	9996871	72	9999714	22	26
35	9970304	224	9982225	173	9991106	122	9996943	72	9999736	20	25
36	9970528	222	9982398	172	9991228	122	9997015	71	9999756	20	24
37	9970750	222	9982570	172	9991350	120	9997086	70	9999776	19	23
38	9970972	221	9982742	170	9991470	120	9997156	68	9999795	18	22
39	9971193	220	9982912	170	9991590	119	9997224	68	9999813	18	21
40	9971413	220	9983082	168	9991709	118	9997292	68	9999831	16	20
41	9971633	218	9983250	168	9991827	117	9997360	66	9999847	16	19
42	9971851	218	9983418	167	9991944	116	9997426	66	9999863	15	18
43	9972069	217	9983585	166	9992060	116	9997492	64	9999878	14	17
44	9972286	216	9983751	166	9992176	114	9997556	64	9999892	13	16
45	9972502	215	9983917	164	9992290	114	9997620	63	9999905	12	15
46	9972717	214	9984081	164	9992404	113	9997683	62	9999917	11	14
47	9972931	214	9984245	163	9992517	112	9997745	62	9999928	11	13
48	9973145	212	9984408	162	9992629	111	9997807	60	9999939	10	12
49	9973357	212	9984570	161	9992740	111	9997867	60	9999949	9	11
50	9973569	211	9984731	160	9992851	109	9997927	59	9999958	8	10
51	9973780	210	9984891	159	9992960	109	9997986	58	9999966	7	9
52	9973990	209	9985050	159	9993069	108	9998044	57	9999973	6	8
53	9974199	209	9985209	158	9993177	107	9998101	56	9999979	6	7
54	9974408	207	9985367	157	9993284	106	9998157	56	9999985	4	6
55	9974615	207	9985524	156	9993390	105	9998213	54	9999989	4	5
56	9974822	206	9985680	155	9993495	105	9998267	54	9999993	3	4
57	9975028	205	9985835	154	9993600	104	9998321	53	9999996	2	3
58	9975233	204	9985989	154	9993704	102	9998374	52	9999998	2	2
59	9975437	204	9986143	152	9993806	102	9998426	51	1·00000	0	1
60	9975641	202	9986295	152	9993908	101	9998477	50	1·00000		0
′	4°	Diff.	3°	Diff.	2°	Diff.	1°	Diff.	0°	Diff.	′

′	0°	1°	2°	3°	4°	5°	6°	′
0	0·0000000	0·0174551	0·0349208	0·0524078	0·0699268	0·0874887	0·1051042	60
1	·0002909	·0177460	·0352120	·0526995	·0702191	·0877818	·1053983	59
2	·0005818	·0180370	·0355033	·0529912	·0705115	·0880749	·1056925	58
3	·0008727	·0183280	·0357945	·0532829	·0708038	·0883681	·1059866	57
4	·0011636	·0186190	·0360858	·0535746	·0710961	·0886612	·1062808	56
5	·0014544	·0189100	·0363771	·0538663	·0713885	·0889544	·1065750	55
6	·0017453	·0192010	·0366683	·0541581	·0716809	·0892476	·1068692	54
7	·0020362	·0194920	·0369596	·0544498	·0719733	·0895408	·1071634	53
8	·0023271	·0197830	·0372509	·0547416	·0722657	·0898341	·1074576	52
9	·0026180	·0200740	·0375422	·0550333	·0725581	·0901273	·1077519	51
10	0·0029089	0·0203650	0·0378335	0·0553251	0·0728505	0·0904206	0·1080462	50
11	·0031998	·0206560	·0381248	·0556169	·0731430	·0907138	·1083405	49
12	·0034907	·0209470	·0384161	·0559087	·0734354	·0910071	·1086348	48
13	·0037816	·0212380	·0387074	·0562005	·0737279	·0913004	·1089291	47
14	·0040725	·0215291	·0389988	·0564923	·0740203	·0915938	·1092234	46
15	·0043634	·0218201	·0392901	·0567841	·0743128	·0918871	·1095178	45
16	·0046542	·0221111	·0395814	·0570759	·0746053	·0921804	·1098122	44
17	·0049451	·0224021	·0398728	·0573678	·0748979	·0924738	·1101066	43
18	·0052360	·0226932	·0401641	·0576596	·0751904	·0927672	·1104010	42
19	·0055269	·0229842	·0404555	·0579515	·0754829	·0930606	·1106955	41
20	0·0058178	0·0232753	0·0407469	0·0582434	0·0757755	0·0933540	0·1109899	40
21	·0061087	·0235663	·0410383	·0585352	·0760680	·0936474	·1112844	39
22	·0063996	·0238574	·0413296	·0588271	·0763606	·0939409	·1115789	38
23	·0066905	·0241484	·0416210	·0591190	·0766532	·0942344	·1118734	37
24	·0069814	·0244395	·0419124	·0594109	·0769458	·0945278	·1121680	36
25	·0072723	·0247305	·0422038	·0597029	·0772384	·0948213	·1124625	35
26	·0075632	·0250216	·0424952	·0599948	·0775311	·0951148	·1127571	34
27	·0078541	·0253127	·0427866	·0602867	·0778237	·0954084	·1130517	33
28	·0081450	·0256038	·0430781	·0605787	·0781164	·0957019	·1133463	32
29	·0084360	·0258948	·0433695	·0608706	·0784090	·0959955	·1136410	31
30	0·0087269	0·0261859	0·0436609	0·0611626	0·0787017	0·0962890	0·1139356	30
31	·0090178	·0264770	·0439524	·0614546	·0789944	·0965826	·1142303	29
32	·0093087	·0267681	·0442438	·0617466	·0792871	·0968763	·1145250	28
33	·0095996	·0270592	·0445353	·0620386	·0795798	·0971699	·1148197	27
34	·0098905	·0273503	·0448268	·0623306	·0798726	·0974635	·1151144	26
35	·0101814	·0276414	·0451183	·0626226	·0801653	·0977572	·1154092	25
36	·0104724	·0279325	·0454097	·0629147	·0804581	·0980509	·1157039	24
37	·0107633	·0282236	·0457012	·0632067	·0807509	·0983446	·1159987	23
38	·0110542	·0285148	·0459927	·0634988	·0810437	·0986383	·1162936	22
39	·0113451	·0288059	·0462842	·0637908	·0813365	·0989320	·1165884	21
40	0·0116361	0·0290970	0·0465757	0·0640829	0·0816293	0·0992257	0·1168832	20
41	·0119270	·0293882	·0468673	·0643750	·0819221	·0995194	·1171781	19
42	·0122179	·0296793	·0471588	·0646671	·0822150	·0998133	·1174730	18
43	·0125088	·0299705	·0474503	·0649592	·0825078	·1001071	·1177679	17
44	·0127998	·0302616	·0477419	·0652513	·0828007	·1004009	·1180628	16
45	·0130907	·0305528	·0480334	·0655435	·0830936	·1006947	·1183578	15
46	·0133817	·0308439	·0483250	·0658356	·0833865	·1009886	·1186528	14
47	·0136726	·0311351	·0486166	·0661278	·0836794	·1012824	·1189478	13
48	·0139635	·0314263	·0489082	·0664199	·0839723	·1015763	·1192428	12
49	·0142545	·0317174	·0491997	·0667121	·0842653	·1018702	·1195378	11
50	0·0145454	0·0320086	0·0494913	0·0670043	0·0845583	0·1021641	0·1198329	10
51	·0148364	·0322998	·0497829	·0672965	·0848512	·1024580	·1201279	9
52	·0151273	·0325910	·0500746	·0675887	·0851442	·1027520	·1204230	8
53	·0154183	·0328822	·0503662	·0678809	·0854372	·1030460	·1207182	7
54	·0157093	·0331734	·0506578	·0681732	·0857302	·1033399	·1210133	6
55	·0160002	·0334646	·0509495	·0684654	·0860233	·1036340	·1213085	5
56	·0162912	·0337558	·0512411	·0687577	·0863163	·1039280	·1216036	4
57	·0165821	·0340471	·0515328	·0690499	·0866094	·1042220	·1218988	3
58	·0168731	·0343383	·0518244	·0693422	·0869025	·1045161	·1221941	2
59	·0171641	·0346295	·0521161	·0696345	·0871956	·1048101	·1224893	1
60	0·0174551	0·0349208	0·0524078	0·0699268	0·0874887	0·1051042	0·1227846	0
′	89°	88°	87°	86°	85°	84°	83°	′

′	7°	8°	9°	10°	11°	12°	13°	′
0	0·1227846	0·1405408	0·1583844	0·1763270	0·1943803	0·2125566	0·2308682	60
1	·1230798	·1408375	·1586826	·1766269	·1946822	·2128606	·2311746	59
2	·1233752	·1411342	·1589809	·1769269	·1949841	·2131647	·2314811	58
3	·1236705	·1414308	·1592791	·1772269	·1952861	·2134688	·2317876	57
4	·1239658	·1417276	·1595774	·1775270	·1955881	·2137730	·2320941	56
5	·1242612	·1420243	·1598757	·1778270	·1958901	·2140772	·2324007	55
6	·1245566	·1423211	·1601740	·1781271	·1961922	·2143814	·2327073	54
7	·1248520	·1426179	·1604724	·1784273	·1964943	·2146857	·2330140	53
8	·1251474	·1429147	·1607708	·1787274	·1967964	·2149900	·2333207	52
9	·1254429	·1432115	·1610692	·1790276	·1970986	·2152944	·2336274	51
10	0·1257384	0·1435084	0.1613677	0·1793279	0·1974008	0·2155988	0·2339342	50
11	·1260339	·1438053	·1616662	·1796281	·1977031	·2159032	·2342410	49
12	·1263294	·1441022	·1619647	·1799284	·1980053	·2162077	·2345479	48
13	·1266249	·1443991	·1622632	·1802287	·1983076	·2165122	·2348548	47
14	·1269205	·1446961	·1625618	·1805291	·1986100	·2168167	·2351617	46
15	·1272161	·1449931	·1628603	·1808295	·1989124	·2171213	·2354687	45
16	·1275117	·1452901	·1631590	·1811299	·1992148	·2174259	·2357758	44
17	·1278073	·1455872	·1634576	·1814303	·1995172	·2177306	·2360829	43
18	·1281030	·1458842	·1637563	·1817308	·1998197	·2180353	·2363900	42
19	·1283986	·1461813	·1640550	·1820313	·2001222	·2183400	·2366971	41
20	0·1286943	0·1464784	0·1643537	0·1823319	0·2004248	0·2186448	0·2370044	40
21	·1289900	·1467756	·1646525	·1826324	·2007274	·2189496	·2373116	39
22	·1292858	·1470727	·1649513	·1829330	·2010300	·2192544	·2376189	38
23	·1295815	·1473699	·1652501	·1832337	·2013327	·2195593	·2379262	37
24	·1298773	·1476672	·1655489	·1835343	·2016354	·2198643	·2382336	36
25	·1301731	·1479644	·1658478	·1838350	·2019381	·2201692	·2385410	35
26	·1304690	·1482617	·1661467	·1841358	·2022409	·2204742	·2388485	34
27	·1307648	·1485590	·1664456	·1844365	·2025437	·2207793	·2391560	33
28	·1310607	·1488563	·1667446	·1847373	·2028465	·2210844	·2394635	32
29	·1313566	·1491536	·1670436	·1850382	·2031494	·2213895	·2397711	31
30	0·1316525	0·1494510	0·1673426	0·1853390	0·2034523	0·2216947	0·2400788	30
31	·1319484	·1497484	·1676417	·1856399	·2037552	·2219999	·2403864	29
32	·1322444	·1500458	·1679407	·1859409	·2040582	·2223051	·2406942	28
33	·1325404	·1503433	·1682398	·1862418	·2043612	·2226104	·2410019	27
34	·1328364	·1506408	·1685390	·1865428	·2046643	·2229157	·2413097	26
35	·1331324	·1509383	·1688381	·1868439	·2049674	·2232211	·2416176	25
36	·1334285	·1512358	·1691373	·1871449	·2052705	·2235265	·2419255	24
37	·1337246	·1515333	·1694366	·1874460	·2055737	·2238319	·2422334	23
38	·1340207	·1518309	·1697358	·1877471	·2058769	·2241374	·2425414	22
39	·1343168	·1521285	·1700351	·1880483	·2061801	·2244429	·2428494	21
40	0·1346129	0·1524262	0·1703344	0·1883495	0·2064834	0·2247485	0·2431575	20
41	·1349091	·1527238	·1706338	·1886507	·2067867	·2250541	·2434656	19
42	·1352053	·1530215	·1709331	·1889520	·2070900	·2253597	·2437737	18
43	·1355015	·1533192	·1712325	·1892533	·2073934	·2256654	·2440819	17
44	·1357978	·1536170	·1715320	·1895546	·2076968	·2259711	·2443902	16
45	·1360940	·1539147	·1718314	·1898559	·2080003	·2262769	·2446984	15
46	·1363903	·1542125	·1721309	·1901573	·2083038	·2265827	·2450068	14
47	·1366866	·1545103	·1724304	·1904587	·2086073	·2268885	·2453151	13
48	·1369830	·1548082	·1727300	·1907602	·2089109	·2271944	·2456236	12
49	·1372793	·1551061	·1730296	·1910617	·2092145	·2275003	·2459320	11
50	0·1375757	0·1554040	0·1733292	0·1913632	0·2095181	0·2278063	0·2462405	10
51	·1378721	·1557019	·1736288	·1916648	·2098218	·2281123	·2465491	9
52	·1381685	·1559998	·1739285	·1919664	·2101255	·2284184	·2468577	8
53	·1384650	·1562978	·1742282	·1922680	·2104293	·2287244	·2471663	7
54	·1387615	·1565958	·1745279	·1925696	·2107331	·2290306	·2474750	6
55	·1390580	·1568939	·1748277	·1928713	·2110369	·2293367	·2477837	5
56	·1393545	·1571919	·1751275	·1931731	·2113407	·2296429	·2480925	4
57	·1396510	·1574900	·1754273	·1934748	·2116446	·2299492	·2484013	3
58	·1399476	·1577881	·1757272	·1937766	·2119486	·2302555	·2487102	2
59	·1402442	·1580863	·1760271	·1940784	·2122525	·2305618	·2490191	1
60	0·1405408	0·1583844	0·1763270	0·1943803	0·2125566	0·2308682	0·2493280	0
′	82°	81°	80°	79°	78°	77°	76°	′

′	14°	15°	16°	17°	18°	19°	20°	′
0	0·2493280	0·2679492	0·2867454	0·3057307	0·3249197	0·3443276	0·3639702	60
1	·2496370	·2682610	·2870602	·3060488	·3252413	·3446530	·3642997	59
2	·2499460	·2685728	·2873751	·3063670	·3255630	·3449785	·3646292	58
3	·2502551	·2688847	·2876900	·3066852	·3258848	·3453040	·3649588	57
4	·2505642	·2691967	·2880050	·3070034	·3262066	·3456296	·3652885	56
5	·2508734	·2695087	·2883201	·3073218	·3265284	·3459553	·3656182	55
6	·2511826	·2698207	·2886352	·3076402	·3268504	·3462810	·3659480	54
7	·2514919	·2701328	·2889503	·3079586	·3271724	·3466068	·3662779	53
8	·2518012	·2704449	·2892655	·3082771	·3274944	·3469327	·3666079	52
9	·2521106	·2707571	·2895808	·3085957	·3278165	·3472586	·3669379	51
10	0·2524200	0·2710694	0·2898961	0·3089143	0·3281387	0·3475846	0·3672680	50
11	·2527294	·2713817	·2902114	·3092330	·3284610	·3479107	·3675981	49
12	·2530389	·2716940	·2905269	·3095517	·3287833	·3482368	·3679284	48
13	·2533484	·2720064	·2908423	·3098705	·3291056	·3485630	·3682587	47
14	·2536580	·2723188	·2911578	·3101893	·3294281	·3488893	·3685890	46
15	·2539676	·2726313	·2914734	·3105083	·3297505	·3492156	·3689195	45
16	·2542773	·2729438	·2917890	·3108272	·3300731	·3495420	·3692500	44
17	·2545870	·2732564	·2921047	·3111462	·3303957	·3498685	·3695806	43
18	·2548968	·2735690	·2924205	·3114653	·3307184	·3501950	·3699112	42
19	·2552066	·2738817	·2927363	·3117845	·3310411	·3505216	·3702420	41
20	0·2555165	0·2741945	0·2930521	0·3121036	0·3313639	0·3508483	0·3705728	40
21	·2558264	·2745072	·2933680	·3124229	·3316868	·3511750	·3709036	39
22	·2561363	·2748201	·2936839	·3127422	·3320097	·3515018	·3712346	38
23	·2564463	·2751330	·2939999	·3130616	·3323327	·3518287	·3715656	37
24	·2567564	·2754459	·2943160	·3133810	·3326557	·3521556	·3718967	36
25	·2570664	·2757589	·2946321	·3137005	·3329788	·3524826	·3722278	35
26	·2573766	·2760719	·2949483	·3140200	·3333020	·3528096	·3725590	34
27	·2576868	·2763850	·2952645	·3143396	·3336252	·3531368	·3728903	33
28	·2579970	·2766981	·2955808	·3146593	·3339485	·3534640	·3732217	32
29	·2583073	·2770113	·2958971	·3149790	·3342719	·3537912	·3735532	31
30	0·2586176	0·2773245	0·2962135	0·3152988	0·3345953	0·3541186	0·3738847	30
31	·2589280	·2776378	·2965299	·3156186	·3349188	·3544460	·3742163	29
32	·2592384	·2779512	·2968464	·3159385	·3352424	·3547734	·3745479	28
33	·2595488	·2782646	·2971630	·3162585	·3355660	·3551010	·3748797	27
34	·2598593	·2785780	·2974796	·3165785	·3358896	·3554286	·3752115	26
35	·2601699	·2788915	·2977962	·3168986	·3362134	·3557562	·3755433	25
36	·2604805	·2792050	·2981129	·3172187	·3365372	·3560840	·3758753	24
37	·2607911	·2795186	·2984297	·3175389	·3368610	·3564118	·3762073	23
38	·2611018	·2798322	·2987465	·3178591	·3371850	·3567397	·3765394	22
39	·2614126	·2801459	·2990634	·3181794	·3375090	·3570676	·3768716	21
40	0·2617234	0·2804597	0·2993803	0·3184998	0·3378330	0·3573956	0·3772038	20
41	·2620342	·2807735	·2996973	·3188202	·3381571	·3577237	·3775361	19
42	·2623451	·2810873	·3000144	·3191407	·3384813	·3580518	·3778685	18
43	·2626560	·2814012	·3003315	·3194613	·3388056	·3583801	·3782010	17
44	·2629670	·2817152	·3006486	·3197819	·3391299	·3587083	·3785335	16
45	·2632780	·2820292	·3009658	·3201025	·3394543	·3590367	·3788661	15
46	·2635891	·2823432	·3012831	·3204232	·3397787	·3593651	·3791988	14
47	·2639002	·2826573	·3016004	·3207440	·3401032	·3596936	·3795315	13
48	·2642114	·2829715	·3019178	·3210649	·3404278	·3600222	·3798644	12
49	·2645226	·2832857	·3022352	·3213858	·3407524	·3603508	·3801973	11
50	0·2648339	0·2835999	0·3025527	0·3217067	0·3410771	0·3606795	0·3805302	10
51	·2651452	·2839143	·3028703	·3220278	·3414019	·3610082	·3808633	9
52	·2654566	·2842286	·3031879	·3223489	·3417267	·3613371	·3811964	8
53	·2657680	·2845430	·3035055	·3226700	·3420516	·3616660	·3815296	7
54	·2660794	·2848575	·3038232	·3229912	·3423765	·3619949	·3818629	6
55	·2663909	·2851720	·3041410	·3233125	·3427015	·3623240	·3821962	5
56	·2667025	·2854866	·3044588	·3236338	·3430266	·3626531	·3825296	4
57	·2670141	·2858012	·3047767	·3239552	·3433518	·3629823	·3828631	3
58	·2673257	·2861159	·3050946	·3242766	·3436770	·3633115	·3831967	2
59	·2676374	·2864306	·3054126	·3245981	·3440023	·3636408	·3835303	1
60	0·2679492	0·2867454	0·3057307	0·3249197	0·3443276	0·3639702	0·3838640	0
′	75°	74°	73°	72°	71°	70°	69°	′

NATURAL COTANGENTS.

′	21°	22°	23°	24°	25°	26°	27°	′
0	0·3838640	0·4040262	0·4244748	0·4452287	0·4663077	0·4877326	0·5095254	60
1	·3841978	·4043646	·4248182	·4455773	·4666618	·4880927	·5098919	59
2	·3845317	·4047031	·4251616	·4459260	·4670161	·4884530	·5102585	58
3	·3848656	·4050417	·4255051	·4462747	·4673705	·4888133	·5106252	57
4	·3851996	·4053804	·4258487	·4466236	·4677250	·4891737	·5109919	56
5	·3855337	·4057191	·4261924	·4469726	·4680796	·4895343	·5113588	55
6	·3858679	·4060579	·4265361	·4473216	·4684342	·4898949	·5117259	54
7	·3862021	·4063968	·4268800	·4476708	·4687890	·4902557	·5120930	53
8	·3865364	·4067358	·4272239	·4480200	·4691439	·4906166	·5124602	52
9	·3868708	·4070748	·4275680	·4483693	·4694988	·4909775	·5128275	51
10	0·3872053	0·4074139	0·4279121	0·4487187	0·4698539	0·4913386	0·5131950	50
11	·3875398	·4077531	·4282563	·4490682	·4702090	·4916997	·5135625	49
12	·3878744	·4080924	·4286005	·4494178	·4705643	·4920610	·5139302	48
13	·3882091	·4084318	·4289449	·4497675	·4709196	·4924224	·5142980	47
14	·3885439	·4087713	·4292894	·4501173	·4712751	·4927838	·5146658	46
15	·3888787	·4091108	·4296339	·4504672	·4716306	·4931454	·5150338	45
16	·3892136	·4094504	·4299785	·4508171	·4719863	·4935071	·5154019	44
17	·3895486	·4097901	·4303232	·4511672	·4723420	·4938689	·5157702	43
18	·3898837	·4101299	·4306680	·4515173	·4726978	·4942308	·5161385	42
19	·3902189	·4104697	·4310129	·4518676	·4730538	·4945928	·5165069	41
20	0·3905541	0·4108097	0·4313579	0·4522179	0·4734098	0·4949549	0·5168755	40
21	·3908894	·4111497	·4317030	·4525683	·4737659	·4953171	·5172441	39
22	·3912247	·4114898	·4320481	·4529188	·4741222	·4956794	·5176129	38
23	·3915602	·4118300	·4323933	·4532694	·4744785	·4960418	·5179818	37
24	·3918957	·4121703	·4327386	·4536201	·4748349	·4964043	·5183508	36
25	·3922313	·4125106	·4330840	·4539709	·4751914	·4967669	·5187199	35
26	·3925670	·4128510	·4334295	·4543218	·4755481	·4971297	·5190891	34
27	·3929027	·4131915	·4337751	·4546728	·4759048	·4974925	·5194584	33
28	·3932386	·4135321	·4341208	·4550238	·4762616	·4978554	·5198278	32
29	·3935745	·4138728	·4344665	·4553750	·4766185	·4982185	·5201974	31
30	0·3939105	0·4142136	0·4348124	0·4557263	0·4769755	0·4985816	0·5205671	30
31	·3942465	·4145544	·4351583	·4560776	·4773326	·4989449	·5209368	29
32	·3945827	·4148953	·4355043	·4564290	·4776899	·4993082	·5213067	28
33	·3949189	·4152363	·4358504	·4567806	·4780472	·4996717	·5216767	27
34	·3952552	·4155774	·4361966	·4571322	·4784046	·5000352	·5220468	26
35	·3955916	·4159186	·4365429	·4574839	·4787621	·5003989	·5224170	25
36	·3959280	·4162598	·4368893	·4578357	·4791197	·5007627	·5227874	24
37	·3962645	·4166012	·4372357	·4581877	·4794774	·5011266	·5231578	23
38	·3966011	·4169426	·4375823	·4585397	·4798352	·5014906	·5235284	22
39	·3969378	·4172841	·4379289	·4588918	·4801932	·5018547	·5238990	21
40	0·3972746	0·4176257	0·4382756	0·4592439	0·4805512	0·5022189	0·5242698	20
41	·3976114	·4179673	·4386224	·4595962	·4809093	·5025832	·5246407	19
42	·3979483	·4183091	·4389693	·4599486	·4812675	·5029476	·5250117	18
43	·3982853	·4186509	·4393163	·4603011	·4816258	·5033121	·5253829	17
44	·3986224	·4189928	·4396634	·4606537	·4819842	·5036768	·5257541	16
45	·3989595	·4193348	·4400105	·4610063	·4823427	·5040415	·5261255	15
46	·3992968	·4196769	·4403578	·4613591	·4827014	·5044063	·5264969	14
47	·3996341	·4200190	·4407051	·4617119	·4830601	·5047718	·8268685	13
48	·3999715	·4203613	·4410526	·4620649	·4834189	·5051363	·5272402	12
49	·4003089	·4207036	·4414001	·4624179	·4837778	·5055015	·5276120	11
50	0·4006465	0.4210460	0·4417477	0·4627710	0·4841368	0·5058668	0·5279839	10
51	·4009841	·4213885	·4420954	·4631243	·4844959	·5062322	·5283560	9
52	·4013218	·4217311	·4424432	·4634776	·4848552	·5065977	·5287281	8
53	·4016596	·4220738	·4427910	·4638310	·4852145	·5069633	·5291004	7
54	·4019974	·4224165	·4431390	·4641845	·4855739	·5073290	·5294727	6
55	·4023354	·4227594	·4434871	·4645382	·4859334	·5076948	·5298452	5
56	·4026734	·4231023	·4438352	·4648919	·4862931	·5080607	·5302178	4
57	·4030115	·4234453	·4441834	·4652457	·4866528	·5084267	·5305906	3
58	·4033496	·4237884	·4445318	·4655996	·4870126	·5087929	·5309634	2
59	·4036879	·4241316	·4448802	·4659536	·4873726	·5091591	·5313364	1
60	0·4040262	0·4244748	0·4452287	0·4663077	0·4877326	0·5095254	0·5317094	0
′	68°	67°	66°	65°	64°	63°	62°	′

′	28°	29°	30°	31°	32°	33°	34°	′
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1	·5320626	·5546894	·5777382	·6012566	·6252739	·6498212	·6749818	59
2	·5324159	·5550698	·5781262	·6016527	·6256786	·6502350	·6753553	58
3	·5328293	·5554504	·5785144	·6020490	·6260834	·6506490	·6757790	57
4	·5332029	·5558311	·5789027	·6024454	·6264884	·6510631	·6762028	56
5	·5335765	·5562119	·5792912	·6028419	·6268935	·6514774	·6766268	55
6	·5339503	·5565929	·5796797	·6032386	·6272988	·6518918	·6770509	54
7	·5343242	·5569739	·5800684	·6036354	·6277042	·6523064	·6774752	53
8	·5346981	·5573551	·5804573	·6040323	·6281098	·6527211	·6778997	52
9	·5350723	·5577364	·5808462	·6044294	·6285155	·6531360	·6783243	51
10	0·5354465	0·5581179	0·5812353	0·6048266	0·6289214	0·6535511	0·6787492	50
11	·5358208	·5584994	·5816245	·6052240	·6293274	·6539663	·6791741	49
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13	·5365699	·5592629	·5824034	·6060192	·6301399	·6547972	·6800246	47
14	·5369446	·5596449	·5827930	·6064170	·6305464	·6552129	·6804501	46
15	·5373194	·5600269	·5831828	·6068149	·6309530	·6556287	·6808758	45
16	·5376943	·5604091	·5835726	·6072130	·6313598	·6560447	·6813016	44
17	·5380694	·5607914	·5839627	·6076112	·6317667	·6564609	·6817276	43
18	·5384445	·5611738	·5843528	·6080095	·6321738	·6568772	·6821537	42
19	·5388198	·5615564	·5847431	·6084080	·6325810	·6572937	·6825801	41
20	0·5391952	0·5619391	0·5851335	0·6088067	0·6329883	0·6577103	0·6830066	40
21	·5395707	·5623219	·5855241	·6092054	·6333959	·6581271	·6834333	39
22	·5399464	·5627048	·5859148	·6096043	·6338035	·6585441	·6838601	38
23	·5403221	·5630879	·5863056	·6100034	·6342113	·6589612	·6842871	37
24	·5406980	·5634710	·5866965	·6104026	·6346193	·6593785	·6847143	36
25	·5410740	·5638543	·5870876	·6108019	·6350274	·6597960	·6851416	35
26	·5414501	·5642378	·5874788	·6112014	·6354357	·6602136	·6855692	34
27	·5418263	·5646213	·5878702	·6116011	·6358441	·6606313	·6859969	33
28	·5422027	·5650050	·5882616	·6120008	·6362527	·6610492	·6864247	32
29	·5425791	·5653888	·5886533	·6124007	·6366614	·6614673	·6868528	31
30	0·5429557	0·5657728	0·5890450	0·6128008	0·6370703	0·6618856	0·6872810	30
31	·5433324	·5661568	·5894369	·6132010	·6374793	·6623040	·6877093	29
32	·5437092	·5665410	·5898289	·6136013	·6378885	·6627225	·6881379	28
33	·5440862	·5669254	·5902211	·6140018	·6382978	·6631413	·6885666	27
34	·5444632	·5673098	·5906134	·6144024	·6387073	·6635601	·6889955	26
35	·5448404	·5676944	·5910058	·6148032	·6391169	·6639792	·6894246	25
36	·5452177	·5680791	·5913984	·6152041	·6395267	·6643984	·6898538	24
37	·5455951	·5684639	·5917910	·6156052	·6399366	·6648178	·6902832	23
38	·5459727	·5688488	·5921839	·6160064	·6403467	·6652373	·6907128	22
39	·5463503	·5692339	·5925768	·6164077	·6407569	·6656570	·6911425	21
40	0·5467281	0·5696191	0·5929699	0·6168092	0·6411673	0·6660769	0·6915725	20
41	·5471060	·5700045	·5933632	·6172108	·6415779	·6664969	·6920026	19
42	·5474840	·5703899	·5937565	·6176126	·6419886	·6669171	·6924328	18
43	·5478621	·5707755	·5941501	·6180145	·6423994	·6673374	·6928633	17
44	·5482404	·5711612	·5945437	·6184166	·6428105	·6677580	·6932939	16
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46	·5489973	·5719331	·5953314	·6192211	·6436329	·6685995	·6941557	14
47	·5493759	·5723192	·5957255	·6196236	·6440444	·6690205	·6945868	13
48	·5497547	·5727054	·5961196	·6200263	·6444560	·6694417	·6950181	12
49	·5501335	·5730918	·5965140	·6204291	·6448678	·6698630	·6954496	11
50	0·5505125	0·5734783	0·5969084	0·6208320	0·6452797	0·6702845	0·6958813	10
51	·5508916	·5738649	·5973030	·6212351	·6456918	·6707061	·6963131	9
52	·5512708	·5742516	·5976978	·6216383	·6461041	·6711280	·6967451	8
53	·5516502	·5746385	·5980926	·6220417	·6465165	·6715500	·6971773	7
54	·5520297	·5750255	·5984877	·6224452	·6469290	·6719721	·6976097	6
55	·5524093	·5754126	·5988828	·6228488	·6473417	·6723944	·6980422	5
56	·5527890	·5757999	·5992781	·6232527	·6477546	·6728169	·6984749	4
57	·5531688	·5761873	·5996735	·6236566	·6481676	·6732396	·6989078	3
58	·5535488	·5765748	·6000691	·6240607	·6485808	·6736624	·6993409	2
59	·5539288	·5769625	·6004648	·6244650	·6489941	·6740854	·6997741	1
60	0·5543091	0·5773503	0·6008606	0·6248694	0·6494076	0·6745085	0·7002075	0
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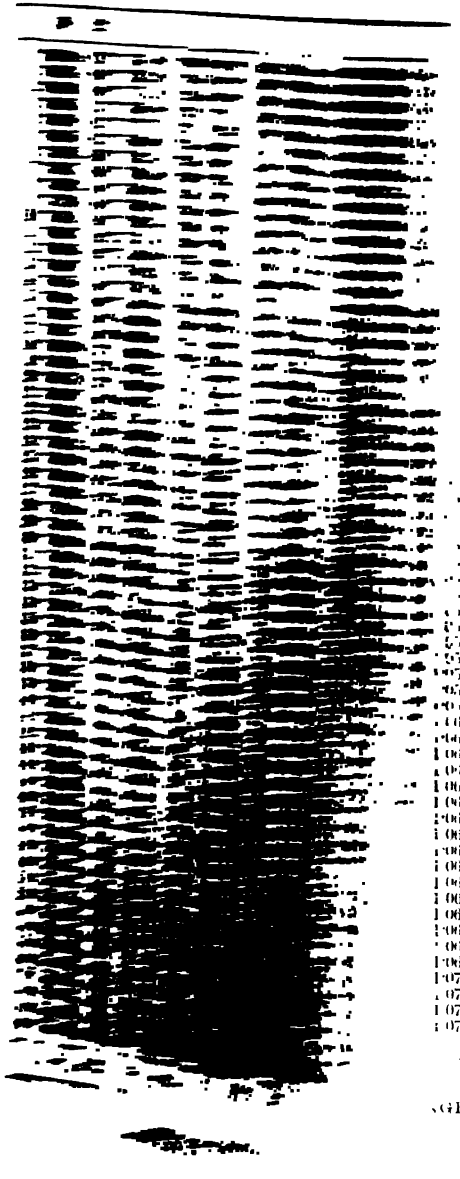
1	7073124	2056	7195418	2020	7315521	1982	7433394	1946	7549004	1907	59
2	7075180	2056	7197438	2019	7317503	1983	7435340	1945	7550911	1907	58
3	7077236	2055	7199457	2019	7319486	1981	7437285	1944	7552818	1906	57
4	7079291	2054	7201476	2018	7321467	1982	7439229	1944	7554724	1906	56
5	7081345	2053	7203494	2017	7323449	1980	7441173	1942	7556630	1905	55
6	7083398	2053	7205511	2017	7325429	1980	7443115	1943	7558535	1904	54
7	7085451	2053	7207528	2016	7327409	1979	7445058	1941	7560439	1904	53
8	7087504	2052	7209544	2015	7329388	1979	7446999	1942	7562343	1903	52
9	7089556	2051	7211559	2015	7331367	1978	7448941	1940	7564246	1902	51
10	7091607	2050	7213574	2015	7333345	1977	7450881	1940	7566148	1902	50
11	7093657	2050	7215589	2013	7335322	1977	7452821	1939	7568050	1901	49
12	7095707	2050	7217602	2013	7337299	1976	7454760	1939	7569951	1900	48
13	7097757	2049	7219615	2013	7339275	1975	7456699	1937	7571851	1900	47
14	7099806	2048	7221628	2012	7341250	1975	7458636	1938	7573751	1899	46
15	7101854	2047	7223640	2011	7343225	1974	7460574	1936	7575650	1898	45
16	7103901	2047	7225651	2010	7345199	1974	7462510	1936	7577548	1898	44
17	7105948	2047	7227661	2010	7347173	1973	7464446	1936	7579446	1897	43
18	7107995	2046	7229671	2010	7349146	1972	7466382	1935	7581343	1897	42
19	7110041	2045	7231681	2009	7351118	1972	7468317	1934	7583240	1896	41
20	7112086	2044	7233690	2008	7353090	1971	7470251	1933	7585136	1895	40
21	7114130	2044	7235698	2007	7355061	1971	7472184	1933	7587031	1895	39
22	7116174	2044	7237705	2007	7357032	1970	7474117	1932	7588926	1894	38
23	7118218	2042	7239712	2007	7359002	1969	7476049	1932	7590820	1893	37
24	7120260	2043	7241719	2005	7360971	1969	7477981	1931	7592713	1893	36
25	7122303	2041	7243724	2005	7362940	1968	7479912	1930	7594606	1892	35
26	7124344	2041	7245729	2005	7364908	1967	7481842	1930	7596498	1891	34
27	7126385	2041	7247734	2004	7366875	1967	7483772	1929	7598389	1891	33
28	7128426	2039	7249738	2003	7368842	1966	7485701	1928	7600280	1890	32
29	7130465	2039	7251741	2003	7370808	1965	7487629	1928	7602170	1890	31
30	7132504	2039	7253744	2002	7372773	1965	7489557	1927	7604060	1889	30
31	7134543	2038	7255746	2001	7374738	1965	7491484	1927	7605949	1888	29
32	7136581	2037	7257747	2001	7376703	1963	7493411	1926	7607837	1887	28
33	7138618	2037	7259748	2000	7378666	1963	7495337	1925	7609724	1887	27
34	7140655	2036	7261748	2000	7380629	1963	7497262	1925	7611611	1886	26
35	7142691	2036	7263748	1999	7382592	1961	7499187	1924	7613497	1886	25
36	7144727	2035	7265747	1998	7384553	1962	7501111	1923	7615383	1885	24
37	7146762	2034	7267745	1998	7386515	1960	7503034	1923	7617268	1884	23
38	7148796	2034	7269743	1997	7388475	1960	7504957	1922	7619152	1884	22
39	7150830	2033	7271740	1996	7390435	1959	7506879	1921	7621036	1883	21
40	7152863	2032	7273736	1996	7392394	1959	7508800	1921	7622919	1883	20
41	7154895	2032	7275732	1996	7394353	1958	7510721	1920	7624802	1881	19
42	7156927	2032	7277728	1994	7396311	1957	7512641	1920	7626683	1881	18
43	7158959	2030	7279722	1994	7398268	1957	7514561	1919	7628564	1881	17
44	7160989	2030	7281716	1994	7400225	1956	7516480	1918	7630445	1880	16
45	7163019	2030	7283710	1993	7402181	1956	7518398	1918	7632325	1879	15
46	7165049	2029	7285703	1992	7404137	1955	7520316	1917	7634204	1878	14
47	7167078	2028	7287695	1991	7406092	1954	7522233	1916	7636082	1878	13
48	7169106	2028	7289686	1991	7408046	1954	7524149	1916	7637960	1878	12
49	7171134	2027	7291677	1991	7410000	1953	7526065	1915	7639838	1876	11
50	7173161	2026	7293668	1989	7411953	1952	7527980	1914	7641714	1876	10
51	7175187	2026	7295657	1989	7413905	1952	7529894	1914	7643590	1875	9
52	7177213	2025	7297646	1989	7415857	1951	7531808	1913	7645465	1875	8
53	7179238	2025	7299635	1988	7417808	1950	7533721	1913	7647340	1874	7
54	7181263	2024	7301623	1987	7419758	1950	7535634	1912	7649214	1873	6
55	7183287	2023	7303610	1987	7421708	1950	7537546	1911	7651087	1873	5
56	7185310	2023	7305597	1986	7423658	1948	7539457	1911	7652960	1872	4
57	7187333	2022	7307583	1985	7425606	1948	7541368	1910	7654832	1872	3
58	7189355	2022	7309568	1985	7427554	1948	7543278	1909	7656704	1870	2
59	7191377	2021	7311553	1984	7429502	1946	7545187	1909	7658574	1870	1
60	7193398	2020	7313537	1984	7431448	1946	7547096	1908	7660444	1870	0
′	44°	Diff.	43°	Diff.	42°	Diff.	41°	Diff.	40°	Diff.	′

NATURAL COSINES.



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1·0811628	1·1197495	46
1·0817939	1·1204053	45
1·0824254	1·1210616	44
1·0830573	1·1217183	43
1·0836896	1·1223754	42
1·0843223	1·1230329	41
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1·0855889	1·1243493	39
1·0862228	1·1250081	38
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1·0893984	1·1283088	33
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1 0932223	1·1322839	27
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1·0951397	1·1342773	24
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1·0964201	1·1356085	22
1·0970609	1·1362747	21
1·0977020	1·1369414	20
1·0983436	1·1376086	19
1·0989857	1·1382761	18
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1·1002709	1·1396126	16
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1·1041365	1·1436326	10
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1·1067219	1·1463215	6
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2	·7010749	·7274318	·7544666	·7822229	·8107478	·8400915	·8703087	58
3	·7015089	·7278767	·7549232	·7826919	·8112300	·8405878	·8708200	57
4	·7019430	·7283218	·7553799	·7831611	·8117124	·8410844	·8713316	56
5	·7023773	·7287671	·7558369	·7836305	·8121951	·8415812	·8718435	55
6	·7028118	·7292125	·7562941	·7841002	·8126780	·8420782	·8723556	54
7	·7032464	·7296582	·7567514	·7845700	·8131611	·8425755	·8728680	53
8	·7036813	·7301041	·7572090	·7850400	·8136444	·8430730	·8733806	52
9	·7041163	·7305501	·7576668	·7855103	·8141280	·8435708	·8738935	51
10	0·7045515	0·7309963	0·7581248	0·7859808	0·8146118	0·8440688	0·8744067	50
11	·7049869	·7314428	·7585829	·7864515	·8150958	·8445670	·8749201	49
12	·7054224	·7318894	·7590413	·7869224	·8155801	·8450655	·8754335	48
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14	·7062940	·7327832	·7599587	·7878649	·8165493	·8460633	·8764620	46
15	·7067301	·7332303	·7604177	·7883364	·8170343	·8465625	·8769765	45
16	·7071664	·7336777	·7608769	·7888082	·8175195	·8470620	·8774912	44
17	·7076028	·7341253	·7613363	·7892802	·8180049	·8475617	·8780062	43
18	·7080395	·7345730	·7617959	·7897524	·8184905	·8480617	·8785215	42
19	·7084763	·7350210	·7622557	·7902248	·8189764	·8485619	·8790370	41
20	0·7089133	0·7354691	0·7627157	0·7906975	0·8194625	0·8490624	0·8795528	40
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22	·7097878	·7363660	·7636363	·7916434	·8204354	·8500640	·8805852	38
23	·7102253	·7368147	·7640969	·7921167	·8209222	·8505653	·8811017	37
24	·7106630	·7372636	·7645577	·7925902	·8214093	·8510667	·8816186	36
25	·7111009	·7377127	·7650188	·7930640	·8218965	·8515684	·8821357	35
26	·7115390	·7381620	·7654800	·7935379	·8223840	·8520704	·8826531	34
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28	·7124157	·7390611	·7664031	·7944865	·8233597	·8530750	·8836886	32
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31	·7137320	·7404113	·7677893	·7959110	·8248251	·8545839	·8852440	29
32	·7141712	·7408618	·7682517	·7963862	·8253140	·8550873	·8857630	28
33	·7146106	·7413124	·7687144	·7968617	·8258031	·8555910	·8862822	27
34	·7150501	·7417633	·7691773	·7973374	·8262925	·8560950	·8868017	26
35	·7154898	·7422143	·7696404	·7978134	·8267821	·8565992	·8873215	25
36	·7159297	·7426655	·7701037	·7982895	·8272719	·8571037	·8878415	24
37	·7163698	·7431170	·7705672	·7987659	·8277620	·8576084	·8883619	23
38	·7168100	·7435686	·7710309	·7992425	·8282523	·8581133	·8888825	22
39	·7172505	·7440204	·7714948	·7997193	·8287429	·8586185	·8894033	21
40	0·7176911	0·7444724	0·7719589	0·8001963	0·8292337	0·8591240	0·8899244	20
41	·7181319	·7449246	·7724233	·8006736	·8297247	·8596297	·8904458	19
42	·7185729	·7453770	·7728878	·8011511	·8302160	·8601357	·8909675	18
43	·7190141	·7458296	·7733526	·8016288	·8307075	·8606419	·8914894	17
44	·7194554	·7462824	·7738176	·8021067	·8311992	·8611484	·8920116	16
45	·7198970	·7467354	·7742827	·8025849	·8316912	·8616551	·8925341	15
46	·7203387	·7471886	·7747481	·8030632	·8321834	·8621621	·8930569	14
47	·7207806	·7476420	·7752137	·8035418	·8326759	·8626694	·8935799	13
48	·7212227	·7480956	·7756795	·8040206	·8331686	·8631768	·8941032	12
49	·7216650	·7485494	·7761455	·8044997	·8336615	·8636846	·8946268	11
50	0·7221075	0·7490033	0·7766118	0·8049790	0·8341547	0·8641926	0·8951506	10
51	·7225502	·7494575	·7770782	·8054584	·8346481	·8647009	·8956747	9
52	·7229930	·7499119	·7775448	·8059382	·8351418	·8652094	·8961991	8
53	·7234361	·7503665	·7780117	·8064181	·8356357	·8657181	·8967238	7
54	·7238793	·7508212	·7784788	·8068983	·8361298	·8662272	·8972487	6
55	·7243227	·7512762	·7789460	·8073787	·8366242	·8667365	·8977739	5
56	·7247663	·7517314	·7794135	·8078593	·8371188	·8672460	·8982994	4
57	·7252101	·7521867	·7798812	·8083401	·8376136	·8677558	·8988251	3
58	·7256540	·7526423	·7803492	·8088212	·8381087	·8682659	·8993512	2
59	·7260982	·7530981	·7808173	·8093025	·8386041	·8687762	·8998775	1
60	0·7265425	0·7535541	0·7812856	0·8097840	0·8390996	0·8692867	0·9004040	0
′	54°	53°	52°	51°	50°	49°	48°	′

NATURAL COTANGENTS.

′	42°	43°	44°	45°	46°	47°	48°	′
0	0·9004040	0·9325151	0·9656888	1·0000000	1·0355308	1·0723687	1·1106125	60
1	·9009309	·9330591	·9662511	1·0005819	1·0361333	1·0729943	1·1112624	59
2	·9014580	·9336034	·9668137	1·0011642	1·0367367	1·0736203	1·1119127	58
3	·9019854	·9341479	·9673767	1·0017469	1·0373404	1·0742467	1·1125635	57
4	·9025131	·9346928	·9679399	1·0023298	1·0379445	1.0748734	1·1132146	56
5	·9030411	·9352380	·9685035	1·0029131	1·0385489	1·0755006	1·1138662	55
6	·9035693	·9357834	·9690674	1·0034968	1·03.1538	1·0761282	1·1145182	54
7	·9040979	·9363292	·9696316	1·0040807	1·0397589	1·0767561	1·1151706	53
8	·9046267	·9368753	·9701962	1·0046651	1·0403645	1 0773845	1·1158235	52
9	·9051557	·9374216	·9707610	1 0052497	1·0409704	1·0780132	1·1164768	51
10	0·9056851	0·9379683	0·9713262	1·0058348	1·0415767	1·0786423	1·1171305	50
11	·9062147	·9385153	·9718917	1·0064201	1·0421833	1·0792718	1·1177846	49
12	·9067446	·9390625	·9724575	1·0070058	1·0427904	1·0799018	1·1184391	48
13	·9072748	·9396101	·9730236	1·0075918	1·0433977	1·0805321	1·1190941	47
14	·9078053	·9401579	·9735901	1·0081782	1·0440055	1·0811628	1·1197495	46
15	·9083360	·9407061	·9741569	1·0087649	1·0446136	1·0817939	1·1204053	45
16	·9088671	·9412545	·9747240	1·0093520	1·0452221	1·0824254	1·1210616	44
17	·9093984	·9418033	·9752914	1·0099394	1·0458310	1·0830573	1·1217183	43
18	·9099300	·9423523	·9758591	1·0105272	1·0464402	1·0836896	1·1223754	42
19	·9104619	·9429017	·9764272	1·0111153	1·0470498	1·0843223	1·1230329	41
20	0·9109940	0·9434513	0 9769956	1·0117038	1·0476598	1·0849554	1·1236909	40
21	·9115265	·9440013	·9775643	1·0122925	1·0482702	1·0855889	1·1243493	39
22	·9120592	·9445516	·9781333	1·0128817	1·0488809	1·0862228	1·1250081	38
23	·9125922	·9451021	·9787027	1·0134712	1·0494920	1·0868571	1·1256674	37
24	·9131255	·9456530	·9792724	1·0140610	1·0501034	1·0874918	1·1263271	36
25	·9136591	·9462042	·9798424	1 0146512	1·0507153	1·0881269	1·1269872	35
26	·9141929	·9467556	·9804127	1·0152418	1·0513275	1·0887624	1·1276478	34
27	·9147270	·9473074	·9809833	1·0158326	1·0519401	1·0893984	1·1283088	33
28	·9152615	·9478595	·9815543	1·0164239	1·0525531	1·0900347	1·1289702	32
29	·9157962	·9484119	·9821256	1·0170155	1·0531664	1·0906714	1·1296321	31
30	0·9163312	0·9489646	0·9826973	1·0176074	1·0537801	1·0913085	1·1302944	30
31	·9168665	·9495176	·9832692	1·0181997	1·0543942	1·0919460	1·1309571	29
32	·9174020	·9500709	·9838415	1·0187923	1·0550087	1·0925840	1·1316203	28
33	·9179379	·9506245	·9844141	1·0193853	1·0556235	1 0932223	1·1322839	27
34	·9184740	·9511784	·9849871	1·0199786	1·0562388	1·0938610	1·1329479	26
35	·9190104	·9517326	·9855603	1·0205723	1·0568544	1·0945002	1·1336124	25
36	·9195471	·9522871	·9861339	1·0211664	1·0574704	1·0951397	1·1342773	24
37	·9200841	·9528420	·9867079	1·0217608	1·0580867	1·0957797	1·1349427	23
38	·9206214	·9533971	·9872821	1·0223555	1·0587035	1·0964201	1·1356085	22
39	·9211590	·9539526	·9878567	1·0229506	1·0593206	1·0970609	1·1362747	21
40	0·9216969	0·9545083	0·9884316	1·0235461	1·0599381	1·0977020	1·1369414	20
41	·9222350	·9550644	·9890069	1·0241419	1·0605560	1·0983436	1·1376086	19
42	·9227734	·9556208	·9895825	1 0247381	1·0611742	1·0989857	1·1382761	18
43	·9233122	·9561774	·9901584	1·0253346	1·0617929	1·0996281	1·1389441	17
44	·9238512	·9567344	·9907346	1·0259315	1·0624119	1·1002709	1·1396126	16
45	·9243905	·9572917	·9913112	1·0265287	1·0630313	1·1009141	1·1402815	15
46	·9249301	·9578494	·9918881	1·0271263	1·0636511	1·1015578	1·1409508	14
47	·9254700	·9584073	·9924654	1·0277243	1·0642713	1·1022019	1·1416206	13
48	·9260102	·9589655	·9930429	1·0283226	1·0648918	1·1028463	1·1422908	12
49	·9265506	·9595241	·9936208	1·0289212	1·0655128	1·1034912	1·1429615	11
50	0·9270914	0·9600829	0·9941991	1·0295203	1·0661341	1·1041365	1·1436326	10
51	·9276324	·9606421	·9947777	1·0301196	1·0667558	1·1047823	1·1443041	9
52	·9281738	·9612016	·9953566	1·0307194	1·0673779	1·1054284	1·1449762	8
53	·9287154	·9617614	·9959358	1·0313195	1·0680004	1·1060750	1·1456486	7
54	·9292573	·9623215	·9965154	1·0319199	1·0686233	1·1067219	1·1463215	6
55	·9297996	·9628819	·9970953	1·0325208	1·0692466	1·1073693	1·1469949	5
56	·9303421	·9634427	·9976756	1·0331220	1·0698702	1·1080171	1·1476687	4
57	·9308849	·9640037	·9982562	1·0337235	1·0704943	1·1086653	1·1483429	3
58	·9314280	·9645651	·9988371	1·0343254	1·0711187	1·1093140	1·1490176	2
59	·9319714	·9651268	·9994184	1·0349277	1·0717435	1·1099630	1·1496928	1
60	0·9325151	0·9656888	1·0000000	1·0355303	1·0723687	1·1106125	1·1503684	0
′	47°	46°	45°	44°	43°	42°	41°	′

′	49°	50°	51°	52°	53°	54°	55°	′
0	1·1503684	1·1917536	1·2348972	1·2799416	1·3270448	1·3763819	1·4281480	60
1	1·1510445	1·1924579	1·2356319	1·2807094	1·3278483	1·3772242	1·4290326	59
2	1·1517210	1·1931626	1·2363672	1·2814776	1·3286524	1·3780672	1·4299178	58
3	1·1523979	1·1938679	1·2371030	1·2822465	1·3294571	1·3789108	1·4308039	57
4	1·1530754	1·1945736	1·2378393	1·2830160	1·3302624	1·3797551	1·4316906	56
5	1·1537532	1·1952799	1·2385762	1·2837860	1·3310684	1·3806001	1·4325781	55
6	1·1544316	1·1959866	1·2393136	1·2845566	1·3318750	1·3814458	1·4334664	54
7	1·1551104	1·1966938	1·2400515	1·2853277	1·3326822	1·3822922	1·4343554	53
8	1·1557896	1·1974015	1·2407900	1·2860995	1·3334900	1·3831392	1·4352451	52
9	1·1564693	1·1981097	1·2415290	1·2868718	1·3342984	1·3839869	1·4361356	51
10	1·1571495	1·1988184	1·2422685	1·2876447	1·3351075	1·3848353	1·4370268	50
11	1·1578301	1·1995276	1·2430086	1·2884182	1·3359172	1·3856844	1·4379187	49
12	1·1585112	1·2002373	1·2437492	1·2891922	1·3367276	1·3865342	1·4388114	48
13	1·1591927	1·2009475	1·2444903	1·2899669	1·3375386	1·3873847	1·4397049	47
14	1·1598747	1·2016581	1·2452320	1·2907421	1·3383502	1·3882358	1·4405991	46
15	1·1605571	1·2023693	1·2459742	1·2915179	1·3391624	1·3890876	1·4414940	45
16	1·1612400	1·2030810	1·2467169	1·2922943	1·3399753	1·3899401	1·4423897	44
17	1·1619234	1·2037932	1·2474602	1·2930713	1·3407888	1·3907934	1·4432862	43
18	1·1626073	1·2045058	1·2482040	1·2938488	1·3416029	1·3916473	1·4441834	42
19	1·1632916	1·2052190	1·2489484	1·2946270	1·3424177	1·3925019	1·4450814	41
20	1·1639763	1·2059327	1·2496933	1·2954057	1·3432331	1·3933571	1·4459801	40
21	1·1646615	1·2066468	1·2504388	1·2961850	1·3440492	1·3942131	1·4468796	39
22	1·1653472	1·2073615	1·2511848	1·2969649	1·3448658	1·3950698	1·4477798	38
23	1·1660334	1·2080767	1·2519313	1·2977454	1·3456832	1·3959272	1·4486808	37
24	1·1667200	1·2087924	1·2526784	1·2985265	1·3465011	1·3967852	1·4495825	36
25	1·1674071	1·2095085	1·2534260	1·2993081	1·3473198	1·3976440	1·4504850	35
26	1·1680947	1·2102252	1·2541742	1·3000904	1·3481390	1·3985034	1·4513883	34
27	1·1687827	1·2109424	1·2549229	1·3008733	1·3489589	1·3993636	1·4522923	33
28	1·1694712	1·2116601	1·2556721	1·3016567	1·3497794	1·4002245	1·4531971	32
29	1·1701601	1·2123783	1·2564219	1·3024407	1·3506006	1·4010860	1·4541027	31
30	1·1708496	1·2130970	1·2571723	1·3032254	1·3514224	1·4019483	1·4550090	30
31	1·1715395	1·2138162	1·2579232	1·3040106	1·3522449	1·4028113	1·4559161	29
32	1·1722298	1·2145359	1·2586747	1·3047964	1·3530680	1·4036749	1·4568240	28
33	1·1729207	1·2152562	1·2594267	1·3055828	1·3538918	1·4045393	1·4577326	27
34	1·1736120	1·2159769	1·2601792	1·3063699	1·3547162	1·4054044	1·4586420	26
35	1·1743038	1·2166982	1·2609323	1·3071575	1·3555413	1·4062702	1·4595522	25
36	1·1749960	1·2174199	1·2616860	1·3079457	1·3563670	1·4071367	1·4604632	24
37	1·1756888	1·2181422	1·2624402	1·3087345	1·3571934	1·4080039	1·4613749	23
38	1·1763820	1·2188650	1·2631950	1·3095239	1·3580204	1·4088718	1·4622874	22
39	1·1770756	1·2195883	1·2639503	1·3103140	1·3588481	1·4097405	1·4632007	21
40	1·1777698	1·2203121	1·2647062	1·3111046	1·3596764	1·4106098	1·4641147	20
41	1·1784644	1·2210364	1·2654626	1·3118958	1·3605054	1·4114799	1·4650296	19
42	1·1791595	1·2217613	1·2662196	1·3126876	1·3613350	1·4123506	1·4659452	18
43	1·1798551	1·2224866	1·2669772	1·3134801	1·3621653	1·4132221	1·4668616	17
44	1·1805512	1·2232125	1·2677353	1·3142731	1·3629963	1·4140943	1·4677788	16
45	1·1812477	1·2239389	1·2684940	1·3150668	1·3638279	1·4149673	1·4686967	15
46	1·1819447	1·2246658	1·2692532	1·3158610	1·3646602	1·4158409	1·4696155	14
47	1·1826422	1·2253932	1·2700130	1·3166559	1·3654931	1·4167153	1·4705350	13
48	1·1833402	1·2261211	1·2707733	1·3174513	1·3663267	1·4175904	1·4714553	12
49	1·1840387	1·2268496	1·2715342	1·3182474	1·3671610	1·4184662	1·4723764	11
50	1·1847376	1·2275786	1·2722957	1·3190441	1·3679959	1·4193427	1·4732983	10
51	1·1854370	1·2283081	1·2730578	1·3198414	1·3688315	1·4202200	1·4742210	9
52	1·1861369	1·2290381	1·2738204	1·3206393	1·3696678	1·4210979	1·4751445	8
53	1·1868373	1·2297687	1·2745835	1·3214379	1·3705047	1·4219766	1·4760688	7
54	1·1875382	1·2304997	1·2753473	1·3222370	1·3713423	1·4228561	1·4769938	6
55	1·1882395	1·2312313	1·2761116	1·3230368	1·3721806	1·4237362	1·4779197	5
56	1·1889414	1·2319634	1·2768765	1·3238371	1·3730195	1·4246171	1·4788463	4
57	1·1896437	1·2326961	1·2776419	1·3246381	1·3738591	1·4254988	1·4797738	3
58	1·1903465	1·2334292	1·2784079	1·3254397	1·3746994	1·4263811	1·4807021	2
59	1·1910498	1·2341629	1·2791745	1·3262420	1·3755403	1·4272642	1·4816311	1
60	1·1917536	1·2348972	1·2799416	1·3270448	1·3763819	1·4281480	1·4825610	0
′	40°	39°	38°	37°	36°	35°	34°	′

′	56°	57°	58°	59°	60°	61°	62°	′
0	1·4825610	1·5398650	1·6003345	1·6642795	1·7320508	1·8040478	1·8807265	60
1	1·4834916	1·5408460	1·6013709	1·6653766	1·7332149	1·8052860	1·8820470	59
2	1·4844231	1·5418281	1·6024082	1·6664748	1·7343808	1·8065256	1·8833690	58
3	1·4853554	1·5428108	1·6034465	1·6675741	1·7355488	1·8077664	1·8846924	57
4	1·4862884	1·5437946	1·6044858	1·6686744	1·7367144	1·8090086	1·8860172	56
5	1·4872223	1·5447792	1·6055260	1·6697758	1·7378883	1·8102521	1·8873436	55
6	1·4881570	1·5457647	1·6065672	1·6708782	1·7390533	1·8114969	1·8886713	54
7	1·4890925	1·5467510	1·6076094	1·6719818	1·7402245	1·8127430	1·8900006	53
8	1·4900288	1·5477383	1·6086525	1·6730864	1·7413969	1·8139904	1·8913313	52
9	1·4909659	1·5487264	1·6096966	1·6741921	1·7425705	1·8152391	1·8926635	51
10	1·4919039	1·5497155	1·6107417	1·6752988	1·7437453	1·8164892	1·8939971	50
11	1·4928426	1·5507054	1·6117878	1·6764067	1·7449213	1·8177405	1·8953322	49
12	1·4937822	1·5516963	1·6128349	1·6775156	1·7460984	1·8189932	1·8966688	48
13	1·4947225	1·5526880	1·6138829	1·6786256	1·7472768	1·8202473	1·8980068	47
14	1·4956637	1·5536806	1·6149320	1·6797367	1·7484564	1·8215026	1·8993464	46
15	1·4966058	1·5546741	1·6159820	1·6808489	1·7496371	1·8227593	1·9006874	45
16	1·4975486	1·5556685	1·6170330	1·6819621	1·7508191	1·8240173	1·9020299	44
17	1·4984923	1·5566639	1·6180850	1·6830765	1·7520023	1·8252767	1·9033738	43
18	1·4994367	1·5576601	1·6191380	1·6841919	1·7531866	1·8265374	1·9047193	42
19	1·5003821	1·5586572	1·6201920	1·6853085	1·7543722	1·8277994	1·9060663	41
20	1·5013282	1·5596552	1·6212469	1·6864261	1·7555590	1·8290628	1·9074147	40
21	1·5022751	1·5606542	1·6223029	1·6875449	1·7567470	1·8303275	1·9087647	39
22	1·5032229	1·5616540	1·6233599	1·6886647	1·7579362	1·8315936	1·9101162	38
23	1·5041716	1·5626548	1·6244178	1·6897856	1·7591267	1·8328610	1·9114691	37
24	1·5051210	1·5636564	1·6254768	1·6909077	1·7603183	1·8341297	1·9128236	36
25	1·5060713	1·5646590	1·6265368	1·6920308	1·7615112	1·8353999	1·9141795	35
26	1·5070224	1·5656625	1·6275977	1·6931550	1·7627053	1·8366713	1·9155370	34
27	1·5079743	1·5666669	1·6286597	1·6942804	1·7639007	1·8379442	1·9168960	33
28	1·5089271	1·5676722	1·6297227	1·6954069	1·7650972	1·8392184	1·9182565	32
29	1·5098807	1·5686784	1·6307867	1·6965344	1·7662950	1·8404940	1·9196186	31
30	1·5108352	1·5696856	1·6318517	1·6976631	1·7674940	1·8417709	1·9209821	30
31	1·5117905	1·5706936	1·6329177	1·6987929	1·7686943	1·8430492	1·9223472	29
32	1·5127466	1·5717026	1·6339847	1·6999238	1·7698958	1·8443289	1·9237138	28
33	1·5137036	1·5727126	1·6350528	1·7010559	1·7710985	1·8456099	1·9250819	27
34	1·5146614	1·5737234	1·6361218	1·7021890	1·7723024	1·8468923	1·9264516	26
35	1·5156201	1·5747352	1·6371919	1·7033233	1·7735076	1·8481761	1·9278228	25
36	1·5165796	1·5757479	1·6382630	1·7044587	1·7747141	1·8494613	1·9291956	24
37	1·5175400	1·5767615	1·6393351	1·7055953	1·7759218	1·8507479	1·9305699	23
38	1·5185012	1·5777760	1·6404082	1·7067329	1·7771307	1·8520358	1·9319457	22
39	1·5194632	1·5787915	1·6414824	1·7078717	1·7783409	1·8533252	1·9333231	21
40	1·5204261	1·5798079	1·6425576	1·7090116	1·7795524	1·8546159	1·9347020	20
41	1·5213899	1·5808253	1·6436338	1·7101527	1·7807651	1·8559080	1·9360825	19
42	1·5223545	1·5818436	1·6447111	1·7112949	1·7819790	1·8572015	1·9374645	18
43	1·5233200	1·5828628	1·6457893	1·7124382	1·7831943	1·8584965	1·9388481	17
44	1·5242863	1·5838830	1·6468687	1·7135827	1·7844107	1·8597928	1·9402333	16
45	1·5252535	1·5849041	1·6479490	1·7147283	1·7856285	1·8610905	1·9416200	15
46	1·5262215	1·5859261	1·6490304	1·7158751	1·7868475	1·8623896	1·9430083	14
47	1·5271904	1·5869491	1·6501128	1·7170230	1·7880678	1·8636902	1·9443981	13
48	1·5281602	1·5879731	1·6511963	1·7181720	1·7892893	1·8649921	1·9457896	12
49	1·5291308	1·5889979	1·6522808	1·7193222	1·7905121	1·8662955	1·9471826	11
50	1·5301023	1·5900238	1·6533663	1·7204736	1·7917362	1·8676003	1·9485772	10
51	1·5310746	1·5910505	1·6544529	1·7216261	1·7929616	1·8689065	1·9499733	9
52	1·5320479	1·5920783	1·6555405	1·7227797	1·7941883	1·8702141	1·9513711	8
53	1·5330219	1·5931070	1·6566292	1·7239346	1·7954162	1·8715231	1·9527704	7
54	1·5339969	1·5941366	1·6577189	1·7250905	1·7966454	1·8728336	1·9541713	6
55	1·5349727	1·5951672	1·6588097	1·7262477	1·7978759	1·8741455	1·9555739	5
56	1·5359494	1·5961987	1·6599016	1·7274060	1·7991077	1·8754588	1·9569780	4
57	1·5369270	1·5972312	1·6609945	1·7285654	1·8003408	1·8767736	1·9583837	3
58	1·5379054	1·5982647	1·6620884	1·7297260	1·8015751	1·8780898	1·9597910	2
59	1·5388848	1·5992991	1·6631834	1·7308878	1·8028108	1·8794074	1·9612000	1
60	1·5398650	1·6003345	1·6642795	1·7320508	1·8040478	1·8807265	1·9626105	0
′	33°	32°	31°	30°	29°	28°	27°	′

′	63°	64°	65°	66°	67°	68°	69°	′
0	1·9626105	2·0503038	2·1445069	2.2460368	2·3558524	2·4750869	2·6050891	60
1	1·9640227	2·0518185	2·1461366	2·2477962	2·3577590	2·4771612	2·6073558	59
2	1·9654364	2·0533349	2·1477683	2·2495580	2·3596683	2·47923?6	2·6096259	58
3	1·9668518	2·0548531	2·1494021	2·2513221	2·3615801	2·4813190	2·6118995	57
4	1·9682688	2·0563732	2·1510378	2·2530885	2·3634946	2·4834023	2·6141766	56
5	1·9696874	2·0578950	2·1526757	2·2548572	2·3654118	2·4854887	2·6164571	55
6	1·9711077	2·0594187	2·1543156	2·2566283	2·3673316	2·4875781	2·6187411	54
7	1·97252 6	2·0609442	2·1559575	2·2584016	2·3692540	2·4896706	2·6210286	53
8	1·9739531	2·0624716	2·1576015	2·2601773	2·3711791	2·4917660	2·6233196	52
9	1·9753782	2·0640008	2·1592476	2·2619554	2·3731068	2·4938645	2·6256141	51
10	1·9768050	2·0655318	2·1608958	2·2637357	2·3750372	2·4959661	2·6279121	50
11	1·9782334	2·0670646	2·1625460	2·2655184	2·3769703	2·4980707	2·6302136	49
12	1·9796635	2·0685994	2·1641983	2·2673035	2·3789060	2·5001784	2·6325186	48
13	1·9810952	2.0701359	2·1658527	2·2690909	2·3808444	2·5022891	2·6348271	47
14	1·9825286	2·0716743	2·1675091	2·2708807	2·3827855	2·5044029	2·6371392	46
15	1·9839636	2·0732146	2·1691677	2·2726729	2·3847293	2·5065198	2·6394549	45
16	1·9854003	2·0747567	2·1708283	2·2744674	2·3866758	2·5086398	2·6417741	44
17	1·9868387	2·0763007	2·1724911	2·2762643	2·3886250	2·5107629	2·6440969	43
18	1·9882787	2·0778465	2·1741559	2·2780636	2·3905769	2·5128890	2·6464232	42
19	1·9897204	2·0793942	2·1758229	2·2798653	2·3925316	2·5150183	2·6487531	41
20	1·9911637	2·0809438	2·1774920	2·2816693	2·3944889	2·5171507	2·6510867	40
21	1·9926087	2·0824953	2·1791631	2·2834758	2·3964490	2·5192863	2·6534238	39
22	1·9940554	2·0840487	2·1808364	2·2852846	2·3984118	2·5214249	2·6557645	38
23	1·9955038	2·0856039	2·1825119	2·2870959	2·4003774	2·5235667	2·6581089	37
24	1·9969539	2·0871610	2·1841894	2·2889096	2·4023457	2·5257117	2·6604569	36
25	1·9984056	2·0887200	2·1858691	2·2907257	2·4043168	2·5278598	2·6628085	35
26	1·9998590	2·0902809	2·1875510	2·2925442	2·4062906	2·5300111	2·6651638	34
27	2·0013142	2·0918437	2·1892349	2·2943651	2·4082672	2·5321655	2·6675227	33
28	2·0027710	2·0934085	2·1909210	2·2961885	2·4102465	2·5343231	2·6698853	32
29	2·0042295	2·0949751	2·1926093	2·2980143	2.4122286	2·5364839	2·6722516	31
30	2·0056897	2·0965436	2·1942997	2·2998425	2·4142136	2·5386479	2·6746215	30
31	2·0071516	2·0981140	2·1959923	2·3016732	2·4162013	2·5408151	2·6769951	29
32	2·0086153	2·0996864	2·1976871	2·3035064	2·4181918	2·5429855	2·6793725	28
33	2·0100806	2·1012607	2·1993840	2·3053420	2·4201851	2·5451591	2·6817535	27
34	2·0115477	2·1028369	2·2010831	2·3071801	2·4221812	2·5473359	2·6841383	26
35	2·0130164	2·1044150	2·2027843	2·3090206	2·4241801	2·5495160	2·6865267	25
36	2·0144869	2·1059951	2·2044878	2·3108637	2·4261819	2·5516992	2·6889190	24
37	2·0159592	2·1075771	2·2061934	2·3127092	2·4281864	2·5538858	2·6913149	23
38	2·0174331	2·1091611	2·2079012	2·3145571	2·4301938	2·5560756	2·6937147	22
39	2·0189088	2·1107470	2·2096112	2·3164076	2·4322041	2·5582686	2·6961181	21
40	2·0203862	2·1123348	2·2113234	2·3182606	2·4342172	2·5604649	2·6985254	20
41	2·0218654	2·1139246	2·2130379	2·3201160	2·4362331	2·5626645	2·7009364	19
42	2·0233462	2·1155164	2·2147545	2·3219740	2·4382519	2·5648674	2·7033513	18
43	2·0248289	2·1171101	2·2164733	2·3238345	2·4402736	2·5670735	2·7057699	17
44	2·0263133	2·1187057	2·2181944	2·3256975	2·4422982	2·5692830	2·7081923	16
45	2·0277994	2·1203034	2·2199177	2·3275630	2·4443256	2·5714957	2·7106186	15
46	2·0292873	2·1219030	2·2216432	2·3294311	2·4463559	2·5737118	2·7130487	14
47	2·0307769	2·1235046	2·2233709	2·3313017	2·4483891	2·5759312	2·7154826	13
48	2·0322683	2·1251082	2·2251009	2·3331748	2·4504252	2·5781539	2·7179204	12
49	2·0337615	2·1267137	2·2268331	2·3350505	2·4524642	2·5803800	2·7203620	11
50	2·0352565	2·1283213	2·2285676	2·3369287	2·4545061	2·5826094	2·7228076	10
51	2·0367532	2·1299308	2·2303043	2·3388095	2·4565510	2·5848421	2·7252569	9
52	2·0382517	2·1315423	2·2320433	2·3406928	2·4585987	2·5870782	2·7277102	8
53	2·0397519	2·1331559	2·2337845	2·3425787	2·4606494	2·5893177	2·7301674	7
54	2·0412540	2·1347714	2·2355280	2·3444672	2·4627030	2·5915606	2·7326284	6
55	2·0427578	2·1363890	2·2372738	2·3463582	2·4647596	2·5938068	2·7350934	5
56	2·0442634	2·1380085	2·2390218	2·3482519	2·4668191	2·5960564	2·7375623	4
57	2·0457708	2·1396301	2·2407721	2·3501481	2·4688816	2·5983095	2·7400352	3
58	2·0472800	2·1412537	2·2425247	2·3520469	2·4709470	2·6005659	2·7425120	2
59	2·0487910	2·1428793	2·2442796	2·3539483	2·4730155	2·6028258	2·7449927	1
60	2·0503038	2·1445069	2·2460368	2·3558524	2·4750869	2·6050891	2·7474774	0
′	26°	25°	24°	23°	22°	21°	20°	′

′	70°	71°	72°	73°	74°	75°	76°	′
0	2·7474774	2·9042109	3·0776835	3·2708526	3·4874144	3·7320508	4·0107809	60
1	2·7499661	2·9069576	3·0807825	3·2742588	3·4912470	3·7363980	4·0157570	59
2	2·7524588	2·9097089	3·0837869	3·2776715	3·4950874	3·7407546	4·0207446	58
3	2·7549554	2·9124649	3·0868468	3·2810907	3·4989356	3·7451207	4·0257440	57
4	2·7574561	2·9152256	3·0899122	3·2845164	3·5027916	3·7494963	4·0307550	56
5	2·7599608	2·9179909	3·0929831	3·2879487	3·5066555	3·7538815	4·0357779	55
6	2·7624695	2·9207610	3·0960596	3·2913876	3·5105273	3·7582763	4·0408125	54
7	2·7649822	2·9235358	3·0991416	3·2948330	3·5144070	3·7626807	4·0458590	53
8	2·7674990	2·9263152	3·1022291	3·2982851	3·5182946	3·7670947	4·0509174	52
9	2·7700199	2·9290995	3·1053223	3·3017438	3·5221902	3·7715185	4·0559877	51
10	2·7725448	2·9318885	3·1084210	3·3052091	3·5260938	3·7759519	4·0610700	50
11	2·7750738	2·9346822	3·1115254	3·3086811	3·5300054	3·7803951	4·0661643	49
12	2·7776069	2·9374807	3·1146353	3·3121598	3·5339251	3·7848481	4·0712707	48
13	2·7801440	2·9402840	3·1177509	3·3156452	3·5378528	3·7893109	4·0763892	47
14	2·7826853	2·9430921	3·1208722	3·3191373	3·5417886	3·7937835	4·0815199	46
15	2·7852307	2·9459050	3·1239991	3·3226362	3·5457325	3·7982661	4·0866627	45
16	2·7877802	2·9487227	3·1271317	3·3261419	3·5496846	3·8027585	4·0918178	44
17	2·7903339	2·9515453	3·1302701	3·3296543	3·5536449	3·8072609	4·0969852	43
18	2·7928917	2·9543727	3·1334141	3·3331736	3·5576136	3·8117733	4·1021649	42
19	2·7954537	2·9572050	3·1365639	3·3366997	3·5615906	3·8162957	4·1073569	41
20	2·7980198	2·9600422	3·1397194	3·3402326	3·5655759	3·8208281	4·1125614	40
21	2·8005901	2·9628842	3·1428807	3·3437724	3·5695681	3·8253707	4·1177784	39
22	2·8031646	2·9657312	3·1460478	3·3473191	3·5735696	3·8299233	4·1230079	38
23	2·8057433	2·9685831	3·1492207	3·3508728	3·5775794	3·8344861	4·1282499	37
24	2·8083263	2·9714399	3·1523994	3·3544333	3·5815975	3·8390591	4·1335046	36
25	2·8109134	2·9743016	3·1555840	3·3580008	3·5856241	3·8436424	4·1387719	35
26	2·8135048	2·9771683	3·1587744	3·3615753	3·5896590	3·8482358	4·1440519	34
27	2·8161004	2·9800400	3·1619706	3·3651568	3·5937024	3·8528396	4·1493446	33
28	2·8187003	2·9829167	3·1651728	3·3687453	3·5977543	3·8574537	4·1546501	32
29	2·8213045	2·9857983	3·1683808	3·3723408	3·6018148	3·8620782	4·1599685	31
30	2·8239129	2·9886850	3·1715948	3·3759434	3·6058835	3·8667131	4·1652998	30
31	2·8265256	2·9915766	3·1748147	3·3795531	3·6099609	3·8713584	4·1706440	29
32	2·8291426	2·9944734	3·1780406	3·3831699	3·6140469	3·8760142	4·1760011	28
33	2·8317639	2·9973751	3·1812724	3·3867938	3·6181415	3·8806805	4·1813713	27
34	2·8343896	3·0002820	3·1845102	3·3904249	3·6222447	3·8853574	4·1867546	26
35	2·8370196	3·0031939	3·1877540	3·3940631	3·6263566	3·8900448	4·1921510	25
36	2·8396539	3·0061109	3·1910039	3·3977085	3·6304771	3·8947429	4·1975606	24
37	2·8422926	3·0090330	3·1942598	3·4013612	3·6346064	3·8994516	4·2029835	23
38	2·8449356	3·0119603	3·1975217	3·4050210	3·6387444	3·9041710	4·2084196	22
39	2·8475831	3·0148926	3·2007897	3·4086882	3·6428911	3·9089011	4·2138690	21
40	2·8502349	3·0178301	3·2040638	3·4123626	3·6470467	3·9136420	4·2193318	20
41	2·8528911	3·0207728	3·2073440	3·4160443	3·6512111	3·9183937	4·2248080	19
42	2·8555517	3·0237207	3·2106304	3·4197333	3·6553844	3·9231563	4·2302977	18
43	2·8582168	3·0266737	3·2139228	3·4234297	3·6595665	3·9279297	4·2358009	17
44	2·8608863	3·0296320	3·2172215	3·4271334	3·6637575	3·9327141	4·2413177	16
45	2·8635602	3·0325954	3·2205263	3·4308446	3·6679575	3·9375094	4·2468482	15
46	2·8662386	3·0355641	3·2238373	3·4345631	3·6721665	3·9423157	4·2523923	14
47	2·8689215	3·0385381	3·2271546	3·4382891	3·6763845	3 9471331	4·2579501	13
48	2·8716088	3·0415173	3·2304780	3·4420226	3·6806115	3·9519615	4·2635218	12
49	2·8743007	3·0445018	3·2338078	3·4457635	3·6848475	3·9568011	4 2691072	11
50	2·8769970	3·0474915	3·2371438	3·4495120	3·6890927	3·9616518	4·2747066	10
51	2·8796979	3·0504866	3·2404860	3·4532679	3·6933469	3 9665137	4·2803199	9
52	2·8824033	3·0534870	3·2438346	3·4570315	3·6976104	3·9713868	4·2859472	8
53	2·8851132	3·0564928	3·2471895	3·4608026	3·7018830	3·9762712	4·2915885	7
54	2·8878277	3·0595038	3·2505508	3·4645818	3·7061648	3·9811669	4·2972440	6
55	2·8905467	3·0625203	3·2539184	3·4683676	3·7104558	3·9860739	4 3029136	5
56	2·8932704	3·0655421	3·2572924	3·4721616	3·7147561	3·9909924	4·3085974	4
57	2·8959986	3·0685694	3·2606728	3·4759632	3·7190658	3·9959223	4·3142955	3
58	2·8987314	3·0716020	3·2640596	3·4797726	3·7233847	4·0008636	4·3200079	2
59	2·9014688	3·0746400	3·2674529	3·4835896	3·7277131	4 0058165	4·3257347	1
60	2·9042109	3·0776835	3·2708526	3·4874144	3·7320508	4·0107809	4·3314759	0
′	19°	18°	17°	16°	15°	14°	13°	′

NATURAL COTANGENTS.

′	77°	78°	79°	80°	81°	82°	83°	′
0	4·3314759	4·7046301	5·1445540	5·6712818	6·3137515	7·1153697	8·1443464	60
1	4·3372816	4·7113686	5·1525557	5·6809446	6·3256601	7·1304190	8·1639786	59
2	4·3430018	4·7181256	5·1605813	5·6906394	6·3376126	7·1455308	8·1837041	58
3	4·3487366	4·7249012	5·1686311	5·7003663	6.3496092	7.1607056	8.2035239	57
4	4·3545861	4·7316954	5·1767051	5·7101256	6·3616502	7·1759437	8·2234384	56
5	4·3604003	4·7385083	5·1848035	5·7199173	6·3737359	7·1912456	8·2434485	55
6	4·3662293	4·7453401	5.1929264	5·7297416	6·3858665	7·2066116	8·2635547	54
7	4·3720731	4·7521907	5·2010738	5·7395988	6·3980422	7·2220422	8·2837579	53
8	4·3779317	4·7590603	5·2092459	5·7494889	6·4102633	7·2375378	8·3040586	52
9	4·3838054	4·7659490	5·2174428	5·7594122	6·4225301	7·2530987	8·3244577	51
10	4·3896940	4·7728568	5·2256647	5·7693688	6·4348428	7·2687255	8·3449558	50
11	4·3955977	4·7797837	5·2339116	5·7793588	6·4472017	7·2844184	8·3655536	49
12	4·4015164	4·7867300	5·2421836	5·7893825	6·4596070	7·3001780	8·3862519	48
13	4·4074504	4·7936957	5·2504809	5·7994400	6·4720591	7·3160047	8·4070515	47
14	4·4133996	4·8006808	5·2588085	5·8095315	6·4845581	7·3318989	8·4279531	46
15	4·4193641	4·8076854	5·2671517	5·8196572	6·4971043	7·3478610	8·4489573	45
16	4·4253439	4·8147096	5·2755255	5·8298172	6·5096981	7·3638916	8·4700651	44
17	4·4313392	4·8217536	5·2839251	5·8400117	6·5223396	7·3799909	8·4912772	43
18	4·4373500	4·8288174	5·2923505	5·8502410	6·5350298	7·3961595	8·5125943	42
19	4·4433762	4·8359010	5·3008018	5·8605051	6·5477672	7·4123978	8·5340172	41
20	4·4494181	4·8430045	5·3092793	5·8708042	6·5605538	7·4287064	8·5555468	40
21	4·4554756	4·8501282	5.3177830	5·8811386	6·5733892	7·4450855	8·5771838	39
22	4·4615489	4·8572719	5·3263131	5·8915084	6·5862739	7·4615357	8·5989290	38
23	4·4676379	4·8644359	5·3348696	5·9019138	6·5992080	7·4780576	8·6207833	37
24	4·4737428	4·8716201	5·3434527	5·9123550	6·6121919	7·4946514	8·6427475	36
25	4·4798636	4·8788248	5·3520626	5·9228322	6·6252258	7·5113178	8·6648223	35
26	4·4860004	4·8860499	5·3606993	5·9333455	6·6383100	7·5280571	8·6870088	34
27	4·4921532	4·8932956	5·3693630	5·9438952	6·6514449	7·5448699	8·7093077	33
28	4·4983221	4·9005620	5·3780538	5·9544815	6·6646307	7·5617567	8·7317198	32
29	4·5045072	4·9078491	5·3867718	5·9651045	6·6778677	7·5787179	8·7542461	31
30	4·5107085	4·9151570	5·3955172	5·9757644	6·6911562	7·5957541	8·7768874	30
31	4·5169261	4·9224859	5·4042901	5·9864614	6·7044966	7·6128657	8·7996446	29
32	4·5231601	4·9298358	5·4130906	5·9971957	6·7178891	7·6300533	8·8225186	28
33	4·5294105	4·9372068	5·4219188	6·0079676	6·7313341	7·6473174	8·8455103	27
34	4·5356773	4·9445990	5·4307750	6·0187772	6·7448318	7·6646584	8·8686206	26
35	4·5419608	4·9520125	5·4396592	6·0296247	6·7583826	7·6820769	8·8918505	25
36	4·5482608	4·9594474	5·4485715	6·0405108	6·7719867	7·6995735	8·9152009	24
37	4·5545776	4·9669037	5·4575121	6·0514343	6·7856446	7·7171486	8·9386726	23
38	4·5609111	4·9743817	5·4664812	6·0623967	6·7993565	7·7348028	8·9622668	22
39	4·5672615	4·9818813	5·4754788	6·0733979	6·8131227	7·7525366	8·9858843	21
40	4·5736287	4·9894027	5·4845052	6·0844381	6·8269437	7·7703506	9·0098261	20
41	4·5800129	4·9969459	5·4935604	6·0955174	6·8408196	7·7882453	9·0337933	19
42	4·5864141	5·0045111	5·5026446	6·1066360	6·8547508	7.8062212	9.0578867	18
43	4·5928325	5·0120984	5·5117579	6·1177943	6·8687378	7·8242790	9·0821074	17
44	4·5992680	5·0197078	5·5209005	6·1289923	6·8827807	7·8424191	9·1064564	16
45	4·6057207	5·0273395	5·5300724	6·1402308	6·8968799	7·8606423	9·1309348	15
46	4·6121908	5·0349935	5·5392740	6·1515085	6·9110359	7·8789489	9·1555436	14
47	4·6186783	5·0426700	5·5485052	6·1628272	6·9252489	7·8973396	9·1802838	13
48	4·6251832	5·0503690	5·5577663	6·1741865	6·9395192	7·9158151	9·2051564	12
49	4·6317056	5·0580907	5·5670574	6·1855867	6·9538473	7·9343758	9·2301627	11
50	4·6382457	5·0658352	5·5763786	6·1970279	6·9682335	7·9530224	9·2553035	10
51	4·6448034	5·0736025	5·5857302	6·2085106	6·9826781	7·9717555	9·2805802	9
52	4·6513788	5·0813928	5·5951121	6·2200347	6·9971806	7·9905756	9·3059936	8
53	4·6579721	5·0892061	5·6045247	6·2316007	7·0117441	8·0094835	9·3315450	7
54	4·6645832	5·0970426	5·6139680	6·2432086	7·0263662	8·0284796	9·3572355	6
55	4·6712124	5·1049024	5·6234421	6·2548588	7·0410482	8·0475647	9·3830663	5
56	4·6778595	5·1127855	5·6329474	6·2665515	7·0557905	8·0667394	9·4090384	4
57	4·6845248	5·1206921	5·6424838	6·2782868	7·0705934	8·0860042	9·4351531	3
58	4·6912083	5·1286224	5·6520516	6·2900651	7·0854573	8·1053599	9·4614116	2
59	4·6979100	5·1365763	5·6616509	6·3018866	7·1003826	8·1248071	9·4878149	1
60	4·7046301	5·1445540	5·6712818	6·3137515	7·1153697	8·1443464	9·5143645	0
′	12°	11°	10°	9°	8°	7°	6°	′

′	84°	85°	86°	87°	88°	89°	′
0	9·5143645	11·430052	14·300666	19·081137	28·636253	57·289962	60
1	9·5410613	11·468474	14·360696	19·187930	28·877089	58·261174	59
2	9·5679068	11·507154	14·421230	19·295922	29·122005	59·265872	58
3	9·5949022	11·546093	14·482273	19·405133	29·371106	60·305820	57
4	9·6220486	11·585294	14·543833	19·515584	29·624499	61·382905	56
5	9·6493475	11·624761	14·605916	19·627296	29·882299	62·499154	55
6	9·6768000	11·664495	14·668529	19·740291	30·144619	63·656741	54
7	9·7044075	11·704500	14·731679	19·854591	30·411580	64·858008	53
8	9·7321713	11·744779	14·795372	19·970219	30·683307	66·105478	52
9	9·7600927	11·785333	14·859616	20·087199	30·959928	67·401854	51
10	9·7881732	11·826167	14·924417	20·205553	31·241577	68·750087	50
11	9·8164140	11·867282	14·989784	20·325308	31·528392	70·153346	49
12	9·8448166	11·908682	15·055723	20·446486	31·820516	71·615070	48
13	9·8733823	11·950370	15·122242	20·569115	32·118099	73·138991	47
14	9·9021125	11·992349	15·189349	20·693220	32·421295	74·729165	46
15	9·9310088	12·034622	15·257052	20·818828	32·730264	76·390009	45
16	9·9600724	12·077192	15·325358	20·945966	33·045173	78·126342	44
17	9·9893050	12·120062	15·394276	21·074664	33·366194	79·943430	43
18	10·018708	12·163236	15·463814	21·204949	33·693509	81·847041	42
19	10·048283	12·206716	15·533981	21·336851	34·027303	83·843507	41
20	10·078031	12·250505	15·604784	21·470401	34·367771	85·939791	40
21	10·107954	12·294609	15·676233	21·605630	34·715115	88·143572	39
22	10·138054	12·339028	15·748337	21·742569	35·069546	90·463336	38
23	10·168332	12·383768	15·821105	21·881251	35·431282	92·908487	37
24	10·198789	12·428831	15·894545	22·021710	35·800553	95·489475	36
25	10·229428	12·474221	15·968667	22·163980	36·177596	98·217943	35
26	10·260249	12·519942	16·043482	22·308097	36·562659	101·10690	34
27	10·291255	12·565997	16·118998	22·454096	36·956001	104·17094	33
28	10·322447	12·612390	16·195225	22·602015	37·357892	107·42848	32
29	10·353827	12·659125	16·272174	22·751892	37·768613	110·89205	31
30	10·385397	12·706205	16·349855	22·903766	38·188459	114·58865	30
31	10·417158	12·753634	16·428279	23·057677	38·617738	118·54018	29
32	10·449112	12·801417	16·507456	23·213666	39·056771	122·77896	28
33	10·481261	12·849557	16·587396	23·371777	39·505895	127·32134	27
34	10·513607	12·898058	16·668112	23·532052	39·965460	132·21851	26
35	10·546151	12·946924	16·749614	23·694537	40·435837	137·50745	25
36	10·578895	12·996160	16·831915	23·859277	40·917412	143·23712	24
37	10·611841	13·045769	16·915025	24·026320	41·410588	149·46502	23
38	10·644992	13·095757	16·998957	24·195714	41·915790	156·25908	22
39	10·678348	13·146127	17·083724	24·367509	42·433464	163·70019	21
40	10·711913	13·196883	17·169337	24·541758	42·964077	171·88540	20
41	10·745687	13·248081	17·255809	24·718512	43·508122	180·93220	19
42	10·779673	13·299574	17·343155	24·897826	44·066113	190·98419	18
43	10·813872	13·351518	17·431385	25·079757	44·638596	202·21875	17
44	10·848288	13·403867	17·520516	25·264361	45·226141	214·85762	16
45	10·882921	13·456625	17·610559	25·451700	45·829351	229·18166	15
46	10·917775	13·509799	17·701529	25·641832	46·448862	245·55198	14
47	10·952850	13·563391	17·793442	25·834823	47·085343	264·44080	13
48	10·988150	13·617409	17·886310	26·030736	47·739501	286·47773	12
49	11·023676	13·671856	17·980150	26·229638	48·412084	312·52137	11
50	11·059431	13·726738	18·074977	26·431600	49·103881	343·77371	10
51	11·095416	13·782060	18·170807	26·636690	49·815726	381·97099	9
52	11·131635	13·837827	18·267654	26·844984	50·548506	429·71757	8
53	11·168089	13·894045	18·365587	27·056557	51·303157	491·10600	7
54	11·204780	13·950719	18·464471	27·271486	52·080673	572·95721	6
55	11·241712	14·007856	18·564473	27·489853	52·882109	687·54887	5
56	11·278885	14·065459	18·665562	27·711740	53·708587	859·43630	4
57	11·316304	14·123536	18·767754	27·937233	54·561300	1145·9153	3
58	11·353970	14·182092	18·871068	28·166422	55·441517	1718·8732	2
59	11·391885	14·241134	18·975523	28·399397	56·350590	3437·7467	1
60	11·430052	14·300666	19·081137	28·636253	57·289962	Infinite	0
′	5°	4°	3°	2°	1°	0°	′

′	0°	1°	2°	3°	4°	5°	6°	′
0	1·0000000	1·0001523	1·0006095	1·0013723	1·0024419	1·0038198	1·0055083	60
1	1·0000000	1·0001574	1·0006198	1·0013877	1·0024623	1·0038454	1·0055391	59
2	1·0000002	1·0001627	1·0006300	1·0014030	1·0024829	1·0038711	1·0055699	58
3	1·0000004	1·0001679	1·0006404	1·0014185	1·0025035	1·0038969	1·0056009	57
4	1·0000007	1·0001733	1·0006509	1·0014341	1·0025241	1·0039227	1·0056319	56
5	1·0000011	1·0001788	1·0006614	1·0014497	1·0025449	1·0039486	1·0056631	55
6	1·0000015	1·0001843	1·0006721	1·0014655	1·0025658	1·0039747	1·0056943	54
7	1·0000021	1·0001900	1·0006828	1·0014813	1·0025867	1·0040008	1·0057256	53
8	1·0000027	1·0001957	1·0006936	1·0014972	1·0026078	1·0040270	1·0057570	52
9	1·0000034	1·0002015	1·0007045	1·0015132	1·0026289	1·0040533	1·0057885	51
10	1·0000042	1·0002073	1·0007154	1·0015293	1·0026501	1·0040796	1·0058200	50
11	1·0000051	1·0002133	1·0007265	1·0015454	1·0026714	1·0041061	1·0058517	49
12	1·0000061	1·0002194	1·0007376	1·0015617	1·0026928	1·0041326	1·0058834	48
13	1·0000072	1·0002255	1·0007489	1·0015780	1·0027142	1·0041592	1·0059153	47
14	1·0000083	1·0002317	1·0007602	1·0015944	1·0027358	1·0041859	1·0059472	46
15	1·0000095	1·0002380	1·0007716	1·0016109	1·0027574	1·0042127	1·0059792	45
16	1·0000108	1·0002444	1·0007830	1·0016275	1·0027791	1·0042396	1·0060113	44
17	1·0000122	1·0002509	1·0007946	1·0016442	1·0028009	1·0042666	1·0060435	43
18	1·0000137	1·0002575	1·0008063	1·0016609	1·0028228	1·0042937	1·0060757	42
19	1·0000153	1·0002641	1·0008180	1·0016778	1·0028448	1·0043208	1·0061081	41
20	1·0000169	1·0002708	1·0008298	1·0016947	1·0028669	1·0043480	1·0061405	40
21	1·0000187	1·0002776	1·0008417	1·0017117	1·0028890	1·0043753	1·0061731	39
22	1·0000205	1·0002845	1·0008537	1·0017288	1·0029112	1·0044028	1·0062057	38
23	1·0000224	1·0002915	1·0008658	1·0017460	1·0029336	1·0044302	1·0062384	37
24	1·0000244	1·0002986	1·0008779	1·0017633	1·0029560	1·0044578	1·0062712	36
25	1·0000264	1·0003058	1·0008902	1·0017806	1·0029785	1·0044855	1·0063040	35
26	1·0000286	1·0003130	1·0009025	1·0017981	1·0030010	1·0045132	1·0063370	34
27	1·0000308	1·0003203	1·0009149	1·0018156	1·0030237	1·0045411	1·0063701	33
28	1·0000332	1·0003277	1·0009274	1·0018332	1·0030464	1·0045690	1·0064032	32
29	1·0000356	1·0003352	1·0009400	1·0018509	1·0030693	1·0045970	1·0064364	31
30	1·0000381	1·0003428	1·0009527	1·0018687	1·0030922	1·0046251	1·0064697	30
31	1·0000407	1·0003505	1·0009654	1·0018866	1·0031152	1·0046533	1·0065031	29
32	1·0000433	1·0003582	1·0009783	1·0019045	1·0031383	1·0046815	1·0065366	28
33	1·0000461	1·0003660	1·0009912	1·0019225	1·0031615	1·0047099	1·0065702	27
34	1·0000489	1·0003739	1·0010042	1·0019407	1·0031847	1·0047383	1·0066039	26
35	1·0000518	1·0003820	1·0010173	1·0019589	1·0032081	1·0047669	1·0066378	25
36	1·0000548	1·0003900	1·0010305	1·0019772	1·0032315	1·0047955	1·0066714	24
37	1·0000579	1·0003982	1·0010438	1·0019956	1·0032551	1·0048242	1·0067054	23
38	1·0000611	1·0004065	1·0010571	1·0020140	1·0032787	1·0048530	1·0067394	22
39	1·0000644	1·0004148	1·0010705	1·0020326	1·0033024	1·0048819	1·0067735	21
40	1·0000677	1·0004232	1·0010841	1·0020512	1·0033261	1·0049108	1·0068077	20
41	1·0000711	1·0004317	1·0010977	1·0020699	1·0033500	1·0049399	1·0068419	19
42	1·0000746	1·0004403	1·0011114	1·0020887	1·0033740	1·0049690	1·0068763	18
43	1·0000782	1·0004490	1·0011251	1·0021076	1·0033980	1·0049982	1·0069108	17
44	1·0000819	1·0004578	1·0011390	1·0021266	1·0034221	1·0050275	1·0069453	16
45	1·0000857	1·0004666	1·0011529	1·0021457	1·0034463	1·0050569	1·0069799	15
46	1·0000895	1·0004756	1·0011670	1·0021648	1·0034706	1·0050864	1·0070146	14
47	1·0000935	1·0004846	1·0011811	1·0021841	1·0034950	1·0051160	1·0070494	13
48	1·0000975	1·0004937	1·0011953	1·0022034	1·0035195	1·0051456	1·0070843	12
49	1·0001016	1·0005029	1·0012096	1·0022228	1·0035440	1·0051754	1·0071193	11
50	1·0001058	1·0005121	1·0012239	1·0022423	1·0035687	1·0052052	1·0071544	10
51	1·0001101	1·0005215	1·0012384	1·0022619	1·0035934	1·0052351	1·0071895	9
52	1·0001144	1·0005309	1·0012529	1·0022815	1·0036182	1·0052651	1·0072248	8
53	1·0001189	1·0005405	1·0012676	1·0023013	1·0036431	1·0052952	1·0072601	7
54	1·0001234	1·0005501	1·0012823	1·0023211	1·0036681	1·0053254	1·0072955	6
55	1·0001280	1·0005598	1·0012971	1·0023410	1·0036932	1·0053557	1·0073310	5
56	1·0001327	1·0005696	1·0013120	1·0023610	1·0037183	1·0053860	1·0073666	4
57	1·0001375	1·0005794	1·0013269	1·0023811	1·0037436	1·0054164	1·0074023	3
58	1·0001423	1·0005894	1·0013420	1·0024013	1·0037689	1·0054470	1·0074380	2
59	1·0001473	1·0005994	1·0013571	1·0024216	1·0037943	1·0054776	1·0074739	1
60	1·0001523	1·0006095	1·0013723	1·0024419	1·0038198	1·0055083	1·0075098	0
′	89°	88°	87°	86°	85°	84°	83°	′

′	7°	8°	9°	10°	11°	12°	13°	′
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1	1·0075459	1·0098689	1·0125118	1·0154737	1·0187743	1·0224089	1·0263731	59
2	1·0075820	1·0099103	1·0125586	1·0155310	1·0188321	1·0224672	1·0264421	58
3	1·0076182	1·0099618	1.0126055	1·0155833	1·0188909	1·0225307	1·0265113	57
4	1·0076545	1·0099934	1·0126524	1·0156357	1·0189478	1·0225942	1·0265806	56
5	1·0076908	1·0100351	1·0126995	1·0156882	1·0190059	1·0226578	1·0266499	55
6	1·0077273	1·0100769	1·0127466	1·0157408	1·0190640	1·0227216	1·0267194	54
7	1·0077639	1·0101187	1·0127939	1·0157934	1·0191222	1·0227854	1·0267889	53
8	1·0078005	1·0101607	1·0128412	1·0158462	1·0191805	1·0228493	1·0268586	52
9	1·0078372	1·0102027	1·0128886	1·0158991	1·0192389	1·0229133	1·0269283	51
10	1·0078741	1·0102449	1·0129361	1·0159520	1·0192973	1·0229774	1·0269982	50
11	1·0079110	1·0102871	1·0129837	1·0160050	1·0193559	1·0230416	1·0270681	49
12	1·0079480	1·0103294	1·0130314	1·0160582	1·0194146	1·0231059	1·0271381	48
13	1·0079851	1·0103718	1·0130791	1·0161114	1·0194734	1·0231703	1·0272082	47
14	1·0080222	1·0104143	1·0131270	1·0161647	1·0195322	1·0232348	1·0272785	46
15	1·0080595	1·0104568	1·0131750	1·0162181	1·0195912	1·0232994	1·0273488	45
16	1·0080968	1·0104995	1·0132230	1·0162716	1·0196502	1·0233641	1·0274192	44
17	1·0081343	1·0105422	1·0132711	1·0163252	1·0197093	1·0234288	1·0274897	43
18	1·0081718	1·0105851	1·0133194	1·0163789	1·0197686	1·0234937	1·0275603	42
19	1·0082094	1·0106280	1·0133677	1·0164327	1·0198279	1·0235587	1·0276310	41
20	1·0082471	1·0106710	1·0134161	1·0164865	1·0198873	1·0236237	1·0277018	40
21	1·0082849	1·0107141	1·0134646	1·0165405	1·0199468	1·0236889	1·0277727	39
22	1·0083228	1·0107573	1·0135132	1·0165946	1·0200064	1·0237541	1·0278437	38
23	1·0083607	1·0108006	1·0135618	1·0166487	1·0200661	1·0238195	1·0279148	37
24	1·0083988	1·0108440	1·0136106	1·0167029	1·0201259	1·0238849	1·0279860	36
25	1·0084369	1·0108875	1·0136595	1·0167573	1·0201858	1·0239504	1·0280573	35
26	1·0084752	1·0109310	1·0137084	1·0168117	1·0202457	1·0240161	1·0281287	34
27	1·0085135	1·0109747	1·0137574	1·0168662	1·0203058	1·0240818	1·0282002	33
28	1·0085519	1·0110184	1·0138066	1·0169208	1·0203660	1·0241476	1·0282717	32
29	1·0085904	1·0110622	1·0138558	1·0169755	1·0204262	1·0242135	1·0283434	31
30	1·0086290	1·0111061	1·0139051	1·0170303	1·0204866	1·0242795	1·0284152	30
31	1·0086676	1·0111501	1·0139545	1·0170851	1·0205470	1·0243456	1·0284871	29
32	1·0087064	1·0111942	1·0140040	1·0171401	1·0206075	1·0244118	1·0285590	28
33	1·0087452	1·0112384	1·0140536	1·0171952	1·0206682	1·0244781	1·0286311	27
34	1·0087842	1·0112827	1·0141032	1·0172503	1·0207289	1·0245445	1·0287033	26
35	1·0088232	1·0113270	1·0141530	1·0173056	1·0207897	1·0246110	1·0287755	25
36	1·0088623	1·0113715	1·0142029	1·0173609	1·0208506	1·0246776	1·0288479	24
37	1·0089015	1·0114160	1·0142528	1·0174163	1·0209116	1·0247442	1·0289203	23
38	1·0089408	1·0114606	1·0143028	1·0174719	1·0209727	1·0248110	1·0289929	22
39	1·0089802	1·0115054	1·0143530	1·0175275	1·0210339	1·0248779	1·0290655	21
40	1·0090196	1·0115502	1·0144032	1·0175832	1·0210952	1·0249448	1·0291383	20
41	1·0090592	1·0115951	1·0144535	1·0176390	1·0211566	1·0250119	1·0292111	19
42	1·0090988	1·0116400	1·0145039	1·0176949	1·0212180	1·0250790	1·0292840	18
43	1·0091386	1·0116851	1·0145544	1·0177509	1·0212796	1·0251463	1·0293571	17
44	1·0091784	1·0117303	1·0146050	1·0178069	1·0213413	1·0252136	1·0294302	16
45	1·0092183	1·0117755	1·0146556	1·0178631	1·0214030	1·0252811	1·0295034	15
46	1·0092583	1·0118209	1·0147064	1·0179194	1·0214649	1·0253486	1·0295768	14
47	1·0092984	1·0118663	1·0147572	1·0179757	1·0215268	1·0254162	1·0296502	13
48	1·0093386	1·0119118	1·0148082	1·0180321	1·0215888	1·0254839	1·0297237	12
49	1·0093788	1·0119575	1·0148592	1·0180887	1·0216510	1·0255518	1·0297973	11
50	1·0094192	1·0120032	1·0149103	1·0181453	1·0217132	1·0256197	1·0298711	10
51	1·0094596	1·0120489	1·0149616	1·0182020	1·0217755	1·0256877	1·0299449	9
52	1·0095001	1·0120948	1·0150129	1·0182588	1·0218379	1·0257558	1·0300188	8
53	1·0095408	1·0121408	1·0150643	1·0183158	1·0219004	1·0258240	1·0300928	7
54	1·0095815	1·0121869	1·0151158	1·0183728	1·0219630	1·0258923	1·0301669	6
55	1·0096223	1·0122330	1·0151673	1·0184298	1·0220257	1·0259607	1·0302411	5
56	1·0096631	1·0122793	1·0152190	1·0184870	1·0220885	1·0260292	1·0303154	4
57	1·0097041	1·0123256	1·0152708	1·0185443	1·0221514	1·0260978	1·0303898	3
58	1·0097452	1·0123720	1·0153226	1·0186017	1·0222144	1·0261665	1·0304643	2
59	1·0097863	1·0124185	1·0153746	1·0186591	1·0222774	1·0262352	1·0305389	1
60	1·0098276	1·0124651	1·0154266	1·0187167	1·0223406	1·0263041	1·0306136	0
′	82°	81°	80°	79°	78°	77°	76°	′

′	14°	15°	16°	17°	18°	19°	20°	′
0	1·0306136	1·0352762	1·0402994	1·0456918	1·0514622	1·0576207	1·0641778	60
1	1·0306884	1·0353569	1·0403863	1·0457848	1·0515647	1·0577267	1·0642905	59
2	1·0307633	1·0354378	1·0404732	1·0458780	1·0516612	1·0578328	1·0644033	58
3	1·0308383	1·0355187	1·0405602	1·0459712	1·0517608	1·0579390	1·0645163	57
4	1·0309134	1·0355998	1·0406473	1·0460646	1·0518606	1·0580453	1·0646294	56
5	1·0309886	1·0356809	1·0407346	1·0461581	1·0519605	1·0581517	1·0647425	55
6	1·0310639	1·0357621	1·0408219	1·0462516	1·0520604	1·0582583	1·0648558	54
7	1·0311393	1·0358435	1·0409094	1·0463453	1·0521605	1·0583649	1·0649693	53
8	1·0312147	1·0359249	1·0409969	1·0464391	1·0522607	1·0584717	1·0650828	52
9	1·0312903	1·0360065	1·0410845	1·0465330	1·0523610	1·0585786	1·0651964	51
10	1·0313660	1·0360881	1·0411723	1·0466270	1·0524614	1·0586855	1·0653102	50
11	1·0314418	1·0361699	1·0412601	1·0467211	1·0525619	1·0587926	1·0654240	49
12	1·0315177	1·0362517	1·0413481	1·0468153	1·0526625	1·0588999	1·0655380	48
13	1·0315936	1·0363337	1·0414362	1·0469096	1·0527633	1·0590072	1·0656521	47
14	1·0316697	1·0364157	1·0415243	1·0470040	1·0528641	1·0591146	1·0657663	46
15	1·0317459	1·0364979	1·0416126	1·0470986	1·0529651	1·0592221	1·0658807	45
16	1·0318222	1·0365801	1·0417009	1·0471932	1·0530661	1·0593298	1·0659951	44
17	1·0318985	1·0366625	1·0417894	1·0472879	1·0531673	1·0594376	1·0661097	43
18	1·0319750	1·0367449	1·0418780	1·0473828	1·0532686	1·0595454	1·0662243	42
19	1·0320516	1·0368275	1·0419667	1·0474777	1·0533699	1·0596534	1·0663391	41
20	1·0321282	1·0369101	1·0420554	1·0475728	1·0534714	1·0597615	1·0664540	40
21	1·0322050	1·0369929	1·0421443	1·0476679	1·0535730	1·0598697	1·0665690	39
22	1·0322818	1·0370757	1·0422333	1·0477632	1·0536747	1·0599781	1·0666842	38
23	1·0323588	1·0371587	1·0423224	1·0478586	1·0537765	1·0600865	1·0667994	37
24	1·0324359	1·0372417	1·0424116	1·0479540	1·0538785	1·0601951	1·0669148	36
25	1·0325130	1·0373249	1·0425009	1·0480496	1·0539805	1·0603037	1·0670302	35
26	1·0325903	1·0374082	1·0425903	1·0481453	1·0540826	1·0604125	1·0671458	34
27	1·0326676	1·0374915	1·0426798	1·0482411	1·0541849	1·0605214	1·0672615	33
28	1·0327451	1·0375750	1·0427694	1·0483370	1·0542873	1·0606304	1·0673774	32
29	1·0328227	1·0376585	1·0428591	1·0484330	1·0543897	1·0607395	1·0674933	31
30	1·0329003	1·0377422	1·0429489	1·0485291	1·0544923	1·0608487	1·0676094	30
31	1·0329781	1·0378260	1·0430388	1·0486253	1·0545950	1·0609580	1·0677255	29
32	1·0330559	1·0379098	1·0431289	1·0487217	1·0546978	1·0610675	1·0678418	28
33	1·0331339	1·0379938	1·0432190	1·0488181	1·0548007	1·0611770	1·0679582	27
34	1·0332119	1·0380779	1·0433092	1·0489146	1·0549037	1·0612867	1·0680747	26
35	1·0332901	1·0381621	1·0433995	1·0490113	1·0550068	1·0613965	1·0681914	25
36	1·0333683	1·0382463	1·0434900	1·0491080	1·0551101	1·0615064	1·0683081	24
37	1·0334467	1·0383307	1·0435805	1·0492049	1·0552134	1·0616164	1·0684250	23
38	1·0335251	1·0384152	1·0436712	1·0493019	1·0553169	1·0617265	1·0685420	22
39	1·0336037	1·0384998	1·0437619	1·0493989	1·0554204	1·0618367	1·0686591	21
40	1·0336823	1·0385844	1·0438528	1·0494961	1·0555241	1·0619471	1·0687763	20
41	1·0337611	1·0386692	1·0439437	1·0495934	1·0556279	1·0620575	1·0688936	19
42	1·0338399	1·0387541	1·0440348	1·0496908	1·0557318	1·0621681	1·0690110	18
43	1·0339188	1·0388391	1·0441259	1·0497883	1·0558358	1·0622788	1·0691286	17
44	1·0339979	1·0389242	1·0442172	1·0498859	1·0559399	1·0623896	1·0692463	16
45	1·0340770	1·0390094	1·0443086	1·0499836	1·0560441	1·0625005	1·0693641	15
46	1·0341563	1·0390947	1·0444001	1·0500815	1·0561485	1·0626115	1·0694820	14
47	1·0342356	1·0391800	1·0444917	1·0501794	1·0562529	1·0627227	1·0696000	13
48	1·0343151	1·0392655	1·0445833	1·0502774	1·0563575	1·0628339	1·0697182	12
49	1·0343946	1·0393511	1·0446751	1·0503756	1·0564621	1·0629453	1·0698364	11
50	1·0344743	1·0394368	1·0447670	1·0504738	1·0565669	1·0630568	1·0699548	10
51	1·0345540	1·0395226	1·0448590	1·0505722	1·0566718	1·0631684	1·0700733	9
52	1·0346338	1·0396085	1·0449511	1·0506706	1·0567768	1·0632801	1·0701919	8
53	1·0347138	1·0396945	1·0450433	1·0507692	1·0568819	1·0633919	1·0703106	7
54	1·0347938	1·0397806	1·0451357	1·0508679	1·0569871	1·0635038	1·0704295	6
55	1·0348740	1·0398669	1·0452281	1·0509667	1·0570924	1·0636158	1·0705484	5
56	1·0349542	1·0399532	1·0453206	1·0510656	1·0571978	1·0637280	1·0706675	4
57	1·0350346	1·0400396	1·0454132	1·0511646	1·0573034	1·0638403	1·0707867	3
58	1·0351150	1·0401261	1·0455060	1·0512637	1·0574090	1·0639527	1·0709060	2
59	1·0351955	1·0402127	1·0455988	1·0513629	1·0575148	1·0640652	1·0710254	1
60	1·0352762	1·0402994	1·0456918	1·0514622	1·0576207	1·0641778	1·0711450	0
′	75°	74°	73°	72°	71°	70°	69°	′

NATURAL COSECANTS.

′	21°	22°	23°	24°	25°	26°	27°	′
0	1·0711450	1·0785347	1·0863604	1·0946363	1·1033779	1·1126019	1·1223262	60
1	1·0712647	1·0786616	1·0864946	1·0947781	1·1035277	1·1127599	1·1224917	59
2	1·0713844	1·0787885	1·0866289	1·0949201	1·1036775	1·1129179	1·1226592	58
3	1·0715043	1·0789156	1·0867634	1·0950622	1·1038275	1·1130761	1·1228259	57
4	1·0716244	1·0790427	1·0868979	1·0952044	1·1039777	1·1132345	1·1229928	56
5	1·0717445	1·0791700	1·0870326	1·0953467	1·1041279	1·1133929	1·1231598	55
6	1·0718647	1·0792975	1·0871675	1·0954892	1·1042783	1·1135516	1·1233269	54
7	1·0719851	1·0794250	1·0873024	1·0956318	1·1044289	1·1137103	1·1234942	53
8	1·0721056	1·0795527	1·0874375	1·0957746	1·1045795	1·1138692	1·1236616	52
9	1·0722262	1·0796805	1·0875727	1·0959174	1·1047303	1·1140282	1·1238292	51
10	1·0723469	1·0798084	1·0877080	1·0960604	1·1048813	1·1141874	1·1239969	50
11	1·0724678	1·0799364	1·0878435	1·0962036	1·1050324	1·1143467	1·1241648	49
12	1·0725887	1·0800646	1·0879791	1·0963468	1·1051836	1·1145062	1·1243328	48
13	1·0727098	1·0801928	1·0881148	1·0964902	1·1053349	1·1146658	1·1245010	47
14	1·0728310	1·0803212	1·0882506	1·0966337	1·1054864	1·1148255	1·1246693	46
15	1·0729523	1·0804497	1·0883866	1·0967774	1·1056380	1·1149854	1·1248377	45
16	1·0730737	1·0805784	1·0885226	1·0969212	1·1057898	1·1151454	1·1250063	44
17	1·0731953	1·0807071	1·0886589	1·0970651	1·1059417	1·1153056	1·1251750	43
18	1·0733170	1·0808360	1·0887952	1·0972091	1·1060937	1·1154659	1·1253439	42
19	1·0734388	1·0809650	1·0889317	1·0973533	1·1062458	1·1156263	1·1255130	41
20	1·0735607	1·0810942	1·0890682	1·0974976	1·1063981	1·1157869	1·1256821	40
21	1·0736827	1·0812234	1·0892050	1·0976420	1·1065506	1·1159476	1·1258514	39
22	1·0738048	1·0813528	1·0893418	1·0977866	1·1067031	1·1161084	1·1260209	38
23	1·0739271	1·0814823	1·0894788	1·0979313	1·1068558	1·1162694	1·1261905	37
24	1·0740495	1·0816119	1·0896159	1·0980761	1·1070087	1·1164306	1·1263603	36
25	1·0741720	1·0817417	1·0897531	1·0982211	1·1071616	1·1165919	1·1265302	35
26	1·0742946	1·0818715	1·0898904	1·0983662	1·1073147	1·1167533	1·1267003	34
27	1·0744173	1·0820015	1·0900279	1·0985114	1·1074680	1·1169148	1·1268705	33
28	1·0745402	1·0821316	1·0901655	1·0986568	1·1076214	1·1170766	1·1270408	32
29	1·0746631	1·0822618	1·0903032	1·0988023	1·1077749	1·1172384	1·1272113	31
30	1·0747862	1·0823922	1·0904411	1·0989479	1·1079285	1·1174004	1·1273819	30
31	1·0749095	1·0825227	1·0905791	1·0990936	1·1080823	1·1175625	1·1275527	29
32	1·0750328	1·0826533	1·0907172	1·0992395	1·1082363	1·1177248	1·1277237	28
33	1·0751562	1·0827840	1·0908554	1·0993855	1·1083903	1·1178872	1·1278948	27
34	1·0752798	1·0829149	1·0909938	1·0995317	1·1085445	1·1180498	1·1280660	26
35	1·0754035	1·0830458	1·0911323	1·0996779	1·1086989	1·1182124	1·1282374	25
36	1·0755273	1·0831769	1·0912709	1·0998243	1·1088533	1·1183753	1·1284089	24
37	1·0756512	1·0833081	1·0914097	1·0999709	1·1090079	1·1185383	1·1285806	23
38	1·0757753	1·0834395	1·0915485	1·1001175	1·1091627	1·1187014	1·1287524	22
39	1·0758995	1·0835709	1·0916876	1·1002644	1·1093176	1·1188647	1·1289244	21
40	1·0760237	1·0837025	1·0918267	1·1004113	1·1094726	1·1190281	1·1290965	20
41	1·0761481	1·0838342	1·0919659	1·1005584	1·1096277	1·1191916	1·1292687	19
42	1·0762727	1·0839661	1·0921053	1·1007056	1·1097830	1·1193553	1·1294412	18
43	1·0763973	1·0840980	1·0922448	1·1008529	1·1099385	1·1195191	1·1296137	17
44	1·0765221	1·0842301	1·0923845	1·1010004	1·1100940	1·1196831	1·1297864	16
45	1·0766470	1·0843623	1·0925243	1·1011480	1·1102498	1·1198472	1·1299593	15
46	1·0767720	1·0844947	1·0926642	1·1012957	1·1104056	1·1200115	1·1301323	14
47	1·0768971	1·0846271	1·0928042	1·1014436	1·1105616	1·1201759	1·1303055	13
48	1·0770224	1·0847597	1·0929444	1·1015916	1·1107177	1·1203405	1·1304788	12
49	1·0771477	1·0848924	1·0930846	1·1017397	1·1108740	1·1205051	1·1306522	11
50	1·0772732	1·0850252	1·0932251	1·1018879	1·1110304	1·1206700	1·1308258	10
51	1·0773988	1·0851582	1·0933656	1·1020363	1·1111869	1·1208350	1·1309996	9
52	1·0775246	1·0852913	1·0935063	1·1021849	1·1113436	1·1210001	1·1311735	8
53	1·0776504	1·0854245	1·0936471	1·1023335	1·1115004	1·1211653	1·1313475	7
54	1·0777764	1·0855578	1·0937880	1·1024823	1·1116573	1·1213308	1·1315217	6
55	1·0779025	1·0856912	1·0939291	1·1026313	1·1118144	1·1214963	1·1316961	5
56	1·0780287	1·0858248	1·0940702	1·1027803	1·1119716	1·1216620	1·1318706	4
57	1·0781550	1·0859585	1·0942116	1·1029295	1·1121290	1·1218278	1·1320452	3
58	1·0782815	1·0860924	1·0943530	1·1030789	1·1122865	1·1219938	1·1322200	2
59	1·0784080	1·0862263	1·0944946	1·1032283	1·1124442	1·1221600	1·1323950	1
60	1·0785347	1·0863604	1·0946363	1·1033779	1·1126019	1·1223262	1·1325701	0
′	68°	67°	66°	65°	64°	63°	62°	′

NATURAL COSECANTS.

′	28°	29°	30°	31°	32°	33°	34°	′
0	1·1325701	1·1433541	1·1547005	1·1666334	1·1791784	1·1923633	1·2062179	60
1	1·1327453	1·1435385	1·1548945	1·1668374	1·1793928	1·1925886	1·2064547	59
2	1·1329207	1·1437231	1·1550887	1·1670416	1·1796074	1·1928142	1·2066917	58
3	1·1330962	1·1439078	1·1552830	1·1672459	1·1798222	1·1930399	1·2069288	57
4	1·1332719	1·1440927	1·1554775	1·1674504	1·1800372	1·1932658	1·2071662	56
5	1·1334478	1·1442778	1·1556722	1·1676551	1·1802523	1·1934918	1·2074037	55
6	1·1336238	1·1444630	1·1558670	1·1678599	1·1804676	1·1837181	1·2076415	54
7	1·1337999	1·1446484	1·1560620	1·1680649	1·1806831	1·1939446	1·2078794	53
8	1·1339762	1·1448339	1·1562572	1·1682701	1·1808988	1·1941712	1·2081175	52
9	1·1341527	1·1450196	1·1564525	1·1684755	1·1811146	1·1943980	1·2083559	51
10	1·1343293	1·1452055	1·1566480	1·1686810	1·1813307	1·1946251	1·2085944	50
11	1·1345060	1·1453915	1·1568436	1·1688867	1·1815469	1·1948523	1·2088331	49
12	1·1346829	1·1455776	1·1570394	1·1690926	1·1817633	1·1950796	1·2090720	48
13	1·1348600	1·1457639	1·1572354	1·1692986	1·1819798	1·1953072	1·2093112	47
14	1·1350372	1·1459504	1·1574315	1·1695048	1·1821966	1·1955350	1·2095505	46
15	1·1352146	1·1461371	1·1576278	1·1697112	1·1824135	1·1957629	1·2097900	45
16	1·1353921	1·1463238	1·1578243	1·1699178	1·1826306	1·1959911	1·2100297	44
17	1·1355697	1·1465108	1·1580209	1·1701245	1·1828479	1·1962194	1·2102696	43
18	1·1357476	1·1466979	1·1582177	1·1703314	1·1830654	1·1964479	1·2105097	42
19	1·1359255	1·1468852	1·1584146	1·1705385	1·1832830	1·1966767	1·2107500	41
20	1·1361036	1·1470726	1·1586118	1·1707457	1·1835008	1·1969056	1·2109905	40
21	1·1362819	1·1472602	1·1588091	1·1709531	1·1837188	1·1971346	1·2112312	39
22	1·1364603	1·1474479	1·1590065	1·1711607	1·1839370	1·1973639	1·2114721	38
23	1·1366389	1·1476358	1·1592041	1·1713685	1·1841554	1·1975934	1·2117132	37
24	1·1368176	1·1478239	1·1594019	1·1715764	1·1843739	1·1978230	1·2119545	36
25	1·1369965	1·1480121	1·1595999	1·1717845	1·1845927	1·1980529	1·2121960	35
26	1·1371755	1·1482005	1·1597980	1·1719928	1·1848116	1·1982829	1·2124377	34
27	1·1373547	1·1483890	1·1599963	1·1722013	1·1850307	1·1985131	1·2126795	33
28	1·1375341	1·1485777	1·1601947	1·1724099	1·1852500	1·1987435	1·2129216	32
29	1·1377135	1·1487665	1·1603933	1·1726187	1·1854694	1·1989741	1·2131639	31
30	1·1378932	1·1489555	1·1605921	1·1728277	1·1856890	1·1992049	1·2134064	30
31	1·1380730	1·1491447	1·1607911	1·1730368	1·1859089	1·1994359	1·2136491	29
32	1·1382529	1·1493340	1·1609902	1·1732462	1·1861289	1·1996671	1·2138920	28
33	1·1384330	1·1495235	1·1611894	1·1734557	1·1863490	1·1998985	1·2141351	27
34	1·1386133	1·1497132	1·1613889	1·1736653	1·1865694	1·2001300	1·2143784	26
35	1·1387937	1·1499030	1·1615885	1·1738752	1·1867900	1·2003618	1·2146218	25
36	1·1389742	1·1500930	1·1617883	1·1740852	1·1870107	1·2005937	1·2148655	24
37	1·1391550	1·1502831	1·1619882	1·1742954	1·1872316	1·2008258	1·2151094	23
38	1·1393358	1·1504734	1·1621883	1·1745058	1·1874527	1·2010582	1·2153535	22
39	1·1395169	1·1506638	1·1623886	1·1747163	1·1876740	1·2012907	1·2155978	21
40	1·1396980	1·1508544	1·1625891	1·1749270	1·1878954	1·2015234	1·2158423	20
41	1·1398794	1·1510452	1·1627897	1·1751379	1·1881171	1·2017563	1·2160870	19
42	1·1400608	1·1512361	1·1629905	1·1753490	1·1883389	1·2019894	1·2163319	18
43	1·1402425	1·1514272	1·1631914	1·1755603	1·1885609	1·2022226	1·2165770	17
44	1·1404243	1·1516185	1·1633925	1·1757717	1·1887831	1·2024561	1·2168223	16
45	1·1406062	1·1518099	1·1635938	1·1759833	1·1890055	1·2026898	1·2170678	15
46	1·1407883	1·1520015	1·1637953	1·1761951	1·1892280	1·2029236	1·2173135	14
47	1·1409706	1·1521932	1·1639969	1·1764070	1·1894508	1·2031577	1·2175594	13
48	1·1411530	1·1523851	1·1641987	1·1766191	1·1896737	1·2033919	1·2178055	12
49	1·1413356	1·1525772	1·1644007	1·1768314	1·1898968	1·2036264	1·2180518	11
50	1·1415183	1·1527694	1·1646028	1·1770439	1·1901201	1·2038610	1·2182983	10
51	1·1417012	1·1529618	1·1648051	1·1772566	1·1903436	1·2040958	1·2185450	9
52	1·1418842	1·1531543	1·1650076	1·1774694	1·1905673	1·2043308	1·2187919	8
53	1·1420674	1·1533470	1·1652102	1·1776824	1·1907911	1·2045660	1·2190390	7
54	1·1422507	1·1535399	1·1654130	1·1778956	1·1910152	1·2048014	1·2192864	6
55	1·1424342	1·1537329	1·1656160	1·1781089	1·1912394	1·2050370	1·2195339	5
56	1·1426179	1·1539261	1·1658191	1·1783225	1·1914638	1·2052728	1·2197816	4
57	1·1428017	1·1541195	1·1660224	1·1785362	1·1916884	1·2055088	1·2200296	3
58	1·1429857	1·1543130	1·1662259	1·1787501	1·1919132	1·2057450	1·2202777	2
59	1·1431698	1·1545067	1·1664296	1·1789642	1·1921381	1·2059814	1·2205260	1
60	1·1433541	1·1547005	1·1666334	1·1791784	1·1923633	1·2062179	1·2207746	0
′	61°	60°	59°	58°	57°	56°	55°	′

′	35°	36°	37°	38°	39°	40°	41°	′
0	1·2207746	1·2360680	1·2521357	1·2690182	1·2867596	1·3054073	1·3250130	60
1	1·2210233	1·2363293	1·2524102	1·2693067	1·2870628	1·3057261	1·3253482	59
2	1·2212723	1·2365909	1·2526850	1·2695955	1·2873663	1·3060451	1·3256837	58
3	1·2215215	1·2368526	1·2529601	1·2698845	1·2876700	1·3063644	1·3260194	57
4	1·2217708	1·2371146	1·2532353	1·2701737	1·2879740	1·3066839	1·3263554	56
5	1·2220204	1·2373768	1·2535108	1·2704632	1·2882782	1·3070038	1·3266918	55
6	1·2222702	1·2376393	1·2537865	1·2707529	1·2885827	1·3073239	1·3270284	54
7	1·2225202	1·2379019	1·2540625	1·2710429	1·2888875	1·3076442	1·3273653	53
8	1·2227703	1·2381647	1·2543387	1·2713331	1·2891925	1·3079649	1·3277024	52
9	1·2230207	1·2384278	1·2546151	1·2716235	1·2894977	1·3082858	1·3280399	51
10	1·2232713	1·2386911	1·2548917	1·2719142	1·2898032	1·3086069	1·3283776	50
11	1·2235222	1·2389546	1·2551685	1·2722052	1·2901090	1·3089284	1·3287156	49
12	1·2237732	1·2392183	1·2554456	1·2724963	1·2904150	1·3092501	1·3290539	48
13	1·2240244	1·2394823	1·2557229	1·2727877	1·2907213	1·3095720	1·3293925	47
14	1·2242758	1·2397464	1·2560005	1·2730794	1·2910278	1·3098943	1·3297314	46
15	1·2245274	1·2400108	1·2562782	1·2733712	1·2913346	1·3102168	1·3300706	45
16	1·2247793	1·2402754	1·2565562	1·2736634	1·2916416	1·3105396	1·3304100	44
17	1·2250313	1·2405402	1·2568345	1·2739557	1·2919489	1·3108626	1·3307497	43
18	1·2252836	1·2408052	1·2571129	1·2742484	1·2922564	1·3111860	1·3310897	42
19	1·2255361	1·2410704	1·2573916	1·2745412	1·2925642	1·3115095	1·3314301	41
20	1·2257887	1·2413359	1·2576705	1·2748343	1·2928723	1·3118334	1·3317707	40
21	1·2260416	1·2416016	1·2579497	1·2751276	1·2931806	1·3121575	1·3321115	39
22	1·2262947	1·2418675	1·2582291	1·2754212	1·2934892	1·3124820	1·3324527	38
23	1·2265480	1·2421336	1·2585087	1·2757151	1·2937980	1·3128066	1·3327942	37
24	1·2268015	1·2423999	1·2587885	1·2760091	1·2941071	1·3131316	1·3331359	36
25	1·2270552	1·2426665	1·2590686	1·2763034	1·2944164	1·3134568	1·3334779	35
26	1·2273091	1·2429333	1·2593489	1·2765980	1·2947260	1·3137823	1·3338203	34
27	1·2275633	1·2432003	1·2596294	1·2768928	1·2950359	1·3141081	1·3341629	33
28	1·2278176	1·2434675	1·2599102	1·2771878	1·2953460	1·3144341	1·3345058	32
29	1·2280722	1·2437349	1·2601912	1·2774831	1·2956564	1·3147604	1·3348489	31
30	1·2283269	1·2440026	1·2604724	1·2777787	1·2959670	1·3150870	1·3351924	30
31	1·2285819	1·2442704	1·2607539	1·2780744	1·2962779	1·3154139	1·3355362	29
32	1·2288371	1·2445385	1·2610356	1·2783705	1·2965890	1·3157410	1·3358802	28
33	1·2290924	1·2448069	1·2613175	1·2786667	1·2969004	1·3160684	1·3362246	27
34	1·2293480	1·2450754	1·2615997	1·2789632	1·2972121	1·3163961	1·3365692	26
35	1·2296039	1·2453442	1·2618820	1·2792600	1·2975240	1·3167240	1·3369141	25
36	1·2298599	1·2456131	1·2621647	1·2795570	1·2978362	1·3170523	1·3372594	24
37	1·2301161	1·2458823	1·2624475	1·2798543	1·2981487	1·3173808	1·3376049	23
38	1·2303725	1·2461518	1·2627306	1·2801518	1·2984614	1·3177096	1·3379507	22
39	1·2306292	1·2464214	1·2630140	1·2804495	1·2987743	1·3180386	1·3382968	21
40	1·2308861	1·2466913	1·2632975	1·2807475	1·2990876	1·3183680	1·3386432	20
41	1·2311432	1·2469614	1·2635813	1·2810457	1·2994011	1·3186976	1·3389898	19
42	1·2314004	1·2472317	1·2638653	1·2813442	1·2997148	1·3190274	1·3393368	18
43	1·2316579	1·2475022	1·2641496	1·2816430	1·3000288	1·3193576	1·3396841	17
44	1·2319156	1·2477730	1·2644341	1·2819419	1·3003431	1·3196881	1·3400316	16
45	1·2321736	1·2480440	1·2647188	1·2822412	1·3006576	1·3200188	1·3403795	15
46	1·2324317	1·2483152	1·2650038	1·2825407	1·3009724	1·3203498	1·3407276	14
47	1·2326900	1·2485866	1·2652890	1·2828404	1·3012875	1·3206810	1·3410761	13
48	1·2329486	1·2488583	1·2655745	1·2831404	1·3016028	1·3210126	1·3414248	12
49	1·2332074	1·2491302	1·2658601	1·2834406	1·3019184	1·3213444	1·3417738	11
50	1·2334664	1·2494023	1·2661460	1·2837411	1·3022343	1·3216765	1·3421232	10
51	1·2337256	1·2496746	1·2664322	1·2840418	1·3025504	1·3220089	1·3424728	9
52	1·2339850	1·2499471	1·2667186	1·2843428	1·3028667	1·3223416	1·3428227	8
53	1·2342446	1·2502199	1·2670052	1·2846440	1·3031834	1·3226745	1·3431729	7
54	1·2345044	1·2504929	1·2672921	1·2849455	1·3035003	1·3230078	1·3435234	6
55	1·2347645	1·2507661	1·2675792	1·2852472	1·3038175	1·3233413	1·3438742	5
56	1·2350248	1·2510396	1·2678665	1·2855492	1·3041349	1·3236750	1·3442253	4
57	1·2352852	1·2513133	1·2681541	1·2858514	1·3044526	1·3240091	1·3445767	3
58	1·2355459	1·2515872	1·2684419	1·2861539	1·3047706	1·3243435	1·3449284	2
59	1·2358069	1·2518613	1·2687299	1·2864566	1·3050888	1·3246781	1·3452804	1
60	1·2360680	1 2521357	1·2690182	1·2867596	1·3054073	1·3250130	1·3456327	0
′	54°	53°	52°	51°	50°	49°	48°	′

′	42°	43°	44°	45°	46°	47°	48°	′
0	1·3456327	1·3673275	1·3901636	1·4142136	1·4395565	1·4662792	1·4944765	60
1	1·3459853	1·3676985	1·3905543	1.4146251	1·4399904	1·4667368	1·4949596	59
2	1·3463382	1·3680699	1·3909453	1·4150370	1·4404246	1·4671948	1·4954431	58
3	1·3466914	1·3684416	1·3913366	1·4154493	1·4408592	1·4676532	1·4959270	57
4	1·3470449	1·3688136	1·3917283	1·4158619	1·4412941	1·4681120	1·4964113	56
5	1·3473987	1·3691859	1·3921203	1·4162749	1·4417295	1·4685713	1·4968961	55
6	1·3477528	1·3695586	1·3925127	1·4166883	1·4421652	1·4690309	1·4973813	54
7	1·3481072	1·3699315	1·3929054	1·4171020	1·4426013	1·4694910	1·4978670	53
8	1·3484619	1·3703048	1·3932985	1·4175161	1·4430379	1·4699514	1·4983531	52
9	1·3488168	1·3706784	1·3936918	1·4179306	1·4434748	1·4704123	1·4988397	51
10	1·3491721	1·3710523	1·3940856	1·4183454	1·4439120	1·4708736	1·4993267	50
11	1·3495277	1·3714266	1·3944796	1·4187605	1·4443497	1·4713354	1·4998141	49
12	1·3498836	1·3718011	1·3948740	1·4191761	1·4447878	1·4717975	1·5003020	48
13	1·3502398	1·3721760	1·3952688	1·4195920	1·4452262	1·4722600	1·5007903	47
14	1·3505963	1·3725512	1·3956639	1·4200082	1·4456651	1·4727230	1·5012791	46
15	1·3509531	1·3729268	1·3960593	1·4204248	1·4461043	1·4731864	1·5017683	45
16	1·3513102	1·3733026	1·3964551	1·4208418	1·4465439	1·4736502	1·5022580	44
17	1·3516677	1·3736788	1·3968512	1·4212592	1·4469839	1·4741144	1·5027481	43
18	1·3520254	1·3740553	1·3972477	1·4216769	1·4474243	1·4745790	1·5032387	42
19	1·3523834	1·3744321	1·3976445	1·4220950	1·4478651	1·4750440	1·5037297	41
20	1·3527417	1·3748092	1·3980416	1·4225134	1·4483063	1·4755095	1·5042211	40
21	1·3531003	1·3751867	1·3984391	1·4229323	1·4487478	1·4759754	1·5047131	39
22	1·3534593	1·3755645	1·3988369	1·4233514	1·4491898	1·4764417	1·5052054	38
23	1·3538185	1·3759426	1·3992351	1·4237710	1·4496322	1·4769084	1·5056982	37
24	1·3541780	1·3763210	1·3996336	1·4241909	1·4500749	1·4773755	1·5061915	36
25	1·3545379	1·3766998	1·4000325	1·4246112	1·4505181	1·4778431	1·5066852	35
26	1·3548980	1·3770789	1·4004317	1·4250319	1·4509616	1·4783111	1·5071793	34
27	1·3552585	1·3774583	1·4008313	1·4254529	1·4514055	1·4787795	1·5076739	33
28	1·3556193	1·3778380	1·4012312	1·4258743	1·4518498	1·4792483	1·5081690	32
29	1·3559803	1·3782181	1·4016315	1·4262961	1·4522946	1·4797176	1·5086645	31
30	1·3563417	1·3785985	1·4020321	1·4267182	1·4527397	1·4801872	1·5091605	30
31	1·3567034	1·3789792	1·4024330	1·4271407	1·4531852	1·4806573	1·5096569	29
32	1·3570654	1·3793602	1·4028343	1·4275636	1·4536311	1·4811278	1·5101538	28
33	1·3574277	1·3797416	1·4032360	1·4279868	1·4540774	1·4815988	1·5106511	27
34	1·3577903	1·3801233	1·4036380	1·4284105	1·4545241	1·4820702	1·5111489	26
35	1·3581532	1·3805053	1·4040403	1·4288345	1·4549712	1·4825420	1·5116472	25
36	1·3585164	1·3808877	1·4044430	1·4292588	1·4554187	1·4830142	1·5121459	24
37	1·3588800	1·3812704	1·4048461	1·4296836	1·4558666	1·4834868	1·5126450	23
38	1·3592438	1·3816534	1·4052494	1·4301087	1·4563149	1·4839599	1·5131446	22
39	1·3596080	1·3820367	1·4056532	1·4305342	1·4567636	1·4844334	1·5136447	21
40	1·3599725	1·3824204	1·4060573	1·4309600	1·4572127	1·4849073	1·5141452	20
41	1·3603372	1·3828044	1·4064617	1·4313863	1·4576621	1·4853817	1·5146462	19
42	1·3607023	1·3831887	1·4068665	1·4318129	1·4581120	1·4858565	1·5151477	18
43	1·3610677	1·3835734	1·4072717	1·4322399	1·4585623	1·4863317	1·5156496	17
44	1·3614334	1·3839584	1·4076772	1·4326672	1·4590130	1·4868073	1·5161520	16
45	1·3617995	1·3843437	1·4080831	1·4330950	1·4594641	1·4872834	1·5166548	15
46	1·3621658	1·3847294	1·4084893	1·4335231	1·4599156	1·4877599	1·5171581	14
47	1·3625324	1·3851153	1·4088958	1·4339516	1·4603675	1·4882369	1·5176619	13
48	1·3628994	1·3855017	1·4093028	1·4343805	1·4608198	1·4887142	1·5181661	12
49	1·3632667	1·3858883	1·4097100	1·4348097	1·4612726	1·4891920	1·5186708	11
50	1·3636343	1·3862753	1·4101177	1·4352393	1·4617257	1·4896703	1·5191759	10
51	1·3640022	1·3866626	1·4105257	1·4356693	1·4621792	1·4901489	1·5196815	9
52	1·3643704	1·3870503	1·4109340	1·4360997	1·4626331	1·4906280	1·5201876	8
53	1·3647389	1·3874383	1·4113427	1·4365305	1·4630875	1·4911076	1·5206942	7
54	1·3651078	1·3878266	1·4117517	1·4369616	1·4635422	1·4915873	1·5212012	6
55	1·3654770	1·3882153	1·4121612	1·4373932	1·4639973	1·4920680	1·5217087	5
56	1·3658464	1·3886043	1·4125709	1·4378251	1·4644529	1·4925488	1·5222166	4
57	1·3662162	1·3889936	1·4129810	1·4382574	1·4649089	1·4930301	1·5227250	3
58	1·3665863	1·3893832	1·4133915	1·4386900	1·4653652	1·4935118	1·5232339	2
59	1·3669567	1·3897733	1·4138024	1·4391231	1·4658220	1·4939940	1·5237433	1
60	1·3673275	1·3901636	1·4142136	1·4395565	1·4662792	1·4944765	1·5242531	0
′	47°	46°	45°	44°	43°	42°	41°	′

NATURAL COSECANTS.

′	49°	50°	51°	52°	53°	54°	55°	′
0	1·5242531	1·5557238	1·5890157	1·6242892	1·6616401	1·7013016	1·7434468	60
1	1·5247634	1·5562634	1·5895868	1·6248743	1·6622819	1·7019831	1·7441715	59
2	1·5252741	1·5568035	1·5901584	1·6254799	1·6629243	1·7026653	1·7448969	58
3	1·5257854	1·5573441	1·5907306	1·6260861	1·6635678	1·7033482	1·7456230	57
4	1·5262971	1·5578852	1·5913033	1·6266929	1·6642110	1·7040318	1·7463499	56
5	1·5268093	1·5584268	1·5918766	1·6273003	1·6648553	1·7047160	1·7470776	55
6	1·5273219	1·5588689	1·5924504	1·6279083	1·6655002	1·7054010	1·7478060	54
7	1·5278351	1·5595115	1·5930247	1·6285169	1·6661458	1·7060867	1·7485352	53
8	1·5283487	1·5600546	1·5935996	1·6291261	1·6667920	1·7067730	1·7492651	52
9	1·5288627	1·5605982	1·5941751	1·6297359	1·6674389	1·7074601	1·7499958	51
10	1·5293773	1·5611424	1·5947511	1·6303462	1·6680864	1·7081478	1·7507273	50
11	1·5298923	1·5616871	1·5953276	1·6309572	1·6687345	1·7088362	1·7514595	49
12	1·5304078	1·5622322	1·5959048	1·6315688	1·6693833	1·7095254	1·7521924	48
13	1·5309238	1·5627779	1·5964824	1·6321809	1·6700328	1·7102152	1·7529262	47
14	1·5314403	1·5633241	1·5970606	1·6327937	1·6706828	1·7109058	1·7536607	46
15	1·5319572	1·5638708	1·5976394	1·6334070	1·6713336	1·7115970	1·7543959	45
16	1·5324746	1·5644181	1·5982187	1·6340210	1·6719850	1·7122890	1·7551320	44
17	1·5329925	1·5649658	1·5987986	1·6346355	1·6726370	1·7129817	1·7558687	43
18	1·5335109	1·5655141	1·5993790	1·6352507	1·6732897	1·7136750	1·7566063	42
19	1·5340297	1·5660628	1·5999600	1·6358664	1·6739430	1·7143691	1·7573446	41
20	1·5345491	1·5666121	1·6005416	1·6364828	1·6745970	1·7150639	1·7580837	40
21	1·5350689	1·5671619	1·6011237	1·6370997	1·6752517	1·7157594	1·7588236	39
22	1·5355892	1·5677123	1·6017064	1·6377173	1·6759070	1·7164556	1·7595642	38
23	1·5361100	1·5682631	1·6022896	1·6383355	1·6765629	1·7171525	1·7603057	37
24	1·5366313	1·5688145	1·6028734	1·6389542	1·6772195	1·7178501	1·7610478	36
25	1·5371530	1·5693664	1·6034577	1·7395736	1·6778768	1·7185484	1·7617908	35
26	1·5376752	1·5699188	1·6040426	1·6401936	1·6785347	1·7192475	1·7625345	34
27	1·5381980	1·5704717	1·6046281	1·6408142	1·6791933	1·7199472	1·7632791	33
28	1·5387212	1·5710252	1·6052142	1·6414354	1·6798525	1·7206477	1·7640244	32
29	1·5392449	1·5715792	1·6058008	1·6420572	1·6805124	1·7213489	1·7647704	31
30	1·5397690	1·5721337	1·6063879	1·6426796	1·6811730	1·7220508	1·7655173	30
31	1·5402937	1·5726887	1·6069757	1·6433027	1·6818342	1·7227534	1·7662649	29
32	1·5408189	1·5732443	1·6075640	1·6439263	1·6824961	1·7234568	1·7670133	28
33	1·5413445	1·5738004	1·6081528	1·6445506	1·6831586	1·7241609	1·7677625	27
34	1·5418706	1·5743570	1·6087423	1·6451754	1·6838219	1·7248657	1·7685125	26
35	1·5423973	1·5749141	1·6093323	1·6458009	1·6844857	1·7255712	1·7692633	25
36	1·5429244	1·5754718	1·6099228	1·6464270	1·6851503	1·7262774	1·7700149	24
37	1·5434520	1·5760300	1·6105140	1·6470537	1·6858155	1·7269844	1·7707672	23
38	1·5439801	1·5765887	1·6111057	1·6476811	1·6864814	1·7276921	1·7715204	22
39	1·5445087	1·5771479	1·6116980	1·6483090	1·6871479	1·7284005	1·7722743	21
40	1·5450378	1·5777077	1·6122908	1·6489376	1·6878151	1·7291096	1·7730290	20
41	1·5455673	1·5782680	1·6128843	1·6495668	1·6884830	1·7298195	1·7737845	19
42	1·5460974	1·5788289	1·6134783	1·6501966	1·6891516	1·7305301	1·7745409	18
43	1·5466280	1·5793902	1·6140728	1·6508270	1·6898208	1·7312414	1·7752980	17
44	1·5471590	1·5799521	1·6146680	1·6514581	1·6904907	1·7319535	1·7760559	16
45	1·5476906	1·5805146	1·6152637	1·6520898	1·6911613	1·7326663	1·7768146	15
46	1·5482226	1·5810776	1·6158600	1·6527221	1·6918326	1·7333798	1·7775741	14
47	1·5487552	1·5816411	1·6164569	1·6533550	1·6925045	1·7340941	1·7783344	13
48	1·5492882	1·5822051	1·6170544	1·6539885	1·6931771	1·7348091	1·7790955	12
49	1·5498218	1·5827697	1·6176524	1·6546227	1·6938504	1·7355248	1·7798574	11
50	1·5503558	1·5833348	1·6182510	1·6552575	1·6945244	1·7362413	1·7806201	10
51	1·5508904	1·5839005	1·6188502	1·6558929	1·6951990	1·7369585	1·7813836	9
52	1·5514254	1·5844667	1·6194500	1·6565290	1·6958744	1·7376764	1·7821479	8
53	1·5519610	1·5850334	1·6200504	1·6571657	1·6965504	1·7383951	1·7829131	6
54	1·5524970	1·5856007	1·6206513	1·6578030	1·6972271	1·7391145	1·7836790	7
55	1·5530335	1·5861685	1·6212528	1·6584409	1·6979044	1·7398347	1·7844457	5
56	1·5535706	1·5867369	1·6218549	1·6590795	1·6985825	1·7405556	1·7852133	4
57	1·5541081	1·5873058	1·6224576	1·6597187	1·6992612	1·7412773	1·7859817	3
58	1·5546462	1·5878752	1·6230609	1·6603586	1·6999407	1·7419997	1·7867508	2
59	1·5551848	1·5884452	1·6236648	1·6609990	1·7006208	1·7427229	1·7875208	1
60	1·5557238	1·5890157	1·6242692	1·6616401	1·7013016	1·7434468	1·7882916	0
′	40°	39°	38°	37°	36°	35°	34°	′

NATURAL COSECANTS.

′	56°	57°	58°	59°	60°	61°	62°	′
0	1·7882916	1·8360785	1·8870799	1·9416040	2·0000000	2·0626653	2·1300545	60
1	1·7890633	1·8369013	1·8879589	1·9425445	2·0010083	2·0637484	2·1312205	59
2	1·7898357	1·8377251	1·8888388	1·9434861	2·0020177	2·0648328	2·1323880	58
3	1·7906090	1·8385498	1·8897197	1·9444288	2·0030283	2·0659186	2·1335570	57
4	1·7913831	1·8393753	1·8906016	1·9453725	2·0040402	2·0670056	2·1347274	56
5	1·7921580	1·8402018	1·8914845	1·9463173	2·0050532	2·0680940	2·1358993	55
6	1·7929337	1·8410292	1·8923684	1·9472632	2·0060674	2·0691836	2·1370726	54
7	1·7937102	1·8418574	1·8932532	1·9482102	2·0070828	2·0702746	2·1382475	53
8	1·7944876	1·8426866	1·8941391	1·9491583	2·0080994	2·0713670	2·1394238	52
9	1·7952658	1·8435166	1·8950259	1·9501075	2·0091172	2·0724606	2·1406015	51
10	1·7960449	1·8443476	1·8959138	1·9510577	2·0101362	2·0735556	2·1417808	50
11	1·7968247	1·8451795	1·8968026	1·9520091	2·0111564	2·0746519	2·1429615	49
12	1·7976054	1·8460123	1·8976924	1·9529615	2·0121779	2·0757496	2·1441438	48
13	1·7983869	1·8468460	1·8985832	1·9539150	2·0132005	2·0768486	2·1453275	47
14	1·7991693	1·8476806	1·8994750	1·9548697	2·0142243	2·0779489	2·1465127	46
15	1·7999524	1·8485161	1·9003678	1·9558254	2·0152494	2·0790506	2·1476993	45
16	1·8007365	1·8493525	1·9012616	1·9567822	2·0162756	2·0801536	2·1488875	44
17	1·8015213	1·8501898	1·9021564	1·9577402	2·0173031	2·0812580	2·1500772	43
18	1·8023070	1·8510281	1·9030522	1·9586992	2·0183318	2·0823637	2·1512684	42
19	1·8030935	1·8518672	1·9039491	1·9596593	2·0193618	2·0834708	2·1524611	41
20	1·8038809	1·8527073	1·9048469	1·9606206	2·0203929	2·0845792	2·1536553	40
21	1·8046691	1·8535483	1·9057457	1·9615829	2·0214253	2·0856890	2·1548510	39
22	1·8054582	1·8543903	1·9066456	1·9625464	2·0224589	2·0868002	2·1560482	38
23	1·8062481	1·8552331	1·9075464	1·9635110	2·0234937	2·0879127	2·1572469	37
24	1·8070388	1·8560769	1·9084483	1·9644767	2·0245297	2·0890265	2·1584471	36
25	1·8078304	1·8569216	1·9093512	1·9654435	2·0255670	2·0901418	2·1596489	35
26	1·8086228	1·8577672	1·9102551	1·9664114	2·0266056	2·0912584	2·1608522	34
27	1·8094161	1·8586138	1·9111600	1·9673805	2·0276453	2·0923764	2·1620570	33
28	1·8102102	1·8594612	1·9120659	1·9683507	2·0286863	2·0934957	2·1632633	32
29	1·8110052	1·8603097	1·9129729	1·9693220	2·0297286	2·0946164	2·1644712	31
30	1·8118010	1·8611590	1·9138809	1·9702944	2·0307720	2·0957385	2·1656806	30
31	1·8125977	1·8620093	1·9147899	1·9712680	2·0318168	2·0968620	2·1668915	29
32	1·8133953	1·8628605	1·9156999	1·9722427	2·0328628	2·0979869	2·1681040	28
33	1·8141937	1·8637126	1·9166110	1·9732185	2·0339100	2·0991131	2·1693180	27
34	1·8149929	1·8645657	1·9175230	1·9741954	2·0349585	2·1002408	2·1705335	26
35	1·8157930	1·8654197	1·9184362	1·9751735	2·0360082	2·1013698	2·1717506	25
36	1·8165940	1·8662747	1·9193503	1·9761527	2·0370592	2·1025002	2·1729693	24
37	1·8173958	1·8671306	1·9202655	1·9771331	2·0381114	2·1036320	2·1741895	23
38	1·8181985	1·8679875	1·9211817	1·9781146	2·0391649	2·1047652	2·1754113	22
39	1·8190021	1·8688453	1·9220990	1·9790972	2·0402197	2·1058998	2·1766346	21
40	1·8198065	1·8699040	1·9230173	1·9800810	2·0412757	2·1070359	2·1778595	20
41	1·8206118	1·8705637	1·9239366	1·9810659	2·0423330	3·1081733	2·1790859	19
42	1·8214179	1·8714244	1·9248570	1·9820520	2·0433916	2·1093121	2·1803139	18
43	1·8222249	1·8722859	1·9257784	1·9830393	2·0444515	2·1104523	2·1815435	17
44	1·8230328	1·8731485	1·9267009	1·9840276	2·0455126	2·1115940	2·1827746	16
45	1·8238416	1·8740120	1·9276244	1·9850172	2·0465750	2·1127371	2·1840074	15
46	1·8246512	1·8748764	1·9285490	1·9860080	2·0476386	2·1138815	2·1852417	14
47	1·8254617	1·8757419	1·9294746	1·9869997	2·0487036	2·1150274	2·1864775	13
48	1·8262731	1·8766082	1·9304013	1·9879927	2·0497698	2·1161748	2·1877150	12
49	1·8270854	1·8774755	1·9313290	1·9889869	2·0508373	2·1173235	2·1889541	11
50	1·8278985	1·8783438	1·9322578	1·9899822	2·0519061	2·1184737	2·1901947	10
51	1·8287125	1·8792131	1·9331876	1·9909787	2·0529762	2·1196253	2·1914370	9
52	1·8295274	1·8800833	1·9341185	1·9919764	2·0540476	2·1207783	2·1926808	8
53	1·8303432	1·8809545	1·9350505	1·9929752	2·0551203	2·1219328	2·1939262	7
54	1·8311599	1·8818266	1·9359835	1·9939753	2·0561942	2·1230887	2·1951733	6
55	1·8319774	1·8826998	1·9369176	1·9949764	2·0572695	2·1242460	2·1964219	5
56	1·8327959	1·8835738	1·9378527	1·9959788	2·0583460	2·1254048	2·1976721	4
57	1·8336152	1·8844489	1·9387889	1·9969823	2·0594239	2·1265651	2·1989240	3
58	1·8344354	1·8853249	1·9397262	1·9979870	2·0605031	2·1277267	2·2001775	2
59	1·8352565	1·8862019	1·9406646	1·9989929	2·0615836	2·1288899	2·2014326	1
60	1·8360785	1·8870799	1·9416040	2·0000000	2·0626653	2·1300545	2·2026893	0
′	33°	32°	31°	30°	29°	28°	27°	′

′	63°	64°	65°	66°	67°	68°	69°	′
0	2·2026893	2·2811720	2·3662016	2·4585933	2·5593047	2·6694672	2·7904281	60
1	2·2039476	2·2825335	2·3676787	2·4602008	2·5610599	2·6713906	2·7925444	59
2	2·2052075	2·2838967	2·3691578	2·4618106	2·5628176	2·6733171	2·7946641	58
3	2·2064691	2·2852618	2·3706390	2·4634227	2·5645781	2·6752465	2·7967873	57
4	2·2077323	2·2866286	2·3721222	2·4650371	2·5663412	2·6771790	2·7989140	56
5	2·2089972	2·2879974	2·3736075	2·4666538	2·5681069	2·6791145	2·8010441	55
6	2·2102637	2·2893679	2·3750949	2·4682729	2·5698752	2·6810530	2·8031777	54
7	2·2115318	2·2907403	2·3765843	2·4698943	2·5716462	2·6829945	2·8053148	53
8	2·2128016	2·2921145	2·3780758	2·4715181	2·5734199	2·6849391	2·8074554	52
9	2·2140730	2·2934906	2·3795694	2·4731442	2·5751963	2·6868867	2·8095995	51
10	2·2153460	2·2948685	2·3810650	2·4747726	2·5769753	2·6888374	2·8117471	50
11	2·2166208	2·2962483	2·3825627	2·4764034	2·5787570	2·6907912	2·8138982	49
12	2·2178971	2·2976299	2·3840625	2·4780366	2·5805414	2·6927480	2·8160529	48
13	2·2191752	2·2990134	2·3855645	2·4796721	2·5823284	2·6947079	2·8182111	47
14	2·2204548	2·3003988	2·3870685	2·4813100	2·5841182	2·6966709	2·8203729	46
15	2·2217362	2·3017860	2·3885746	2·4829503	2·5859107	2·6986370	2·8225382	45
16	2·2230192	2·3031751	2·3900828	2·4845929	2·5877058	2·7006061	2·8247071	44
17	2·2243039	2·3045660	2·3915931	2·4862380	2·5895037	2·7025784	2·8268796	43
18	2·2255903	2·3059588	2·3931055	2·4878854	2·5913043	2·7045538	2·8290556	42
19	2·2268783	2·3073536	2·3946201	2·4895352	2·5931077	2·7065323	2·8312353	41
20	2·2281681	2·3087501	2·3961367	2·4911874	2·5949137	2·7085139	2·8334185	40
21	2·2294595	2·3101486	2·3976555	2·4928421	2·5967225	2·7104987	2·8356054	39
22	2·2307526	2·3115490	2·3991764	2·4944991	2·5985341	2·7124866	2·8377958	38
23	2·2320474	2·3129513	2·4006995	2·4961586	2·6003484	2·7144777	2·8399899	37
24	2·2333438	2·3143554	2·4022247	2·4978204	2·6021654	2·7164719	2·8421877	36
25	2·2346420	2·3157615	2·4037520	2·4994848	2·6039852	2·7184693	2·8443891	35
26	2·2359419	2·3171695	2·4052815	2·5011515	2·6058078	2·7204698	2·8465941	34
27	2·2372435	2·3185794	2·4068132	2·5028207	2·6076332	2·7224735	2·8488028	33
28	2·2385468	2·3199912	2·4083469	2·5044923	2·6094613	2·7244804	2·8510152	32
29	2·2398517	2·3214049	2·4098829	2·5061663	2·6112922	2·7264905	2·8532312	31
30	2·2411585	2·3228205	2·4114210	2·5078428	2·6131259	2·7285038	2·8554510	30
31	2·2424669	2·3242381	2·4129613	2·5095218	2·6149624	2·7305203	2·8576744	29
32	2·2437770	2·3256575	2·4145038	2·5112032	2·6168018	2·7325400	2·8599015	28
33	2·2450889	2·3270790	2·4160484	2·5128871	2·6186439	2·7345630	2·8621324	27
34	2·2464025	2·3285023	2·4175952	2·5145735	2·6204888	2·7365892	2·8643670	26
35	2·2477178	2·3299276	2·4191442	2·5162624	2·6223366	2·7386186	2·8666053	25
36	2·2490348	2·3313548	2·4206954	2·5179537	2 6241872	2·7406512	2·8688474	24
37	2·2503536	2·3327840	2·4222488	2·5196475	2·6260406	2·7426871	2·8710932	23
38	2·2516741	2·3342152	2·4238044	2·5213438	2·6278969	2·7447263	2·8733428	22
39	2·2529964	2·3356482	2·4253622	2·5230426	2·6297560	2·7467687	2·8755961	21
40	2·2543204	2·3370833	2·4269222	2·5247440	2·6316180	2·7488144	2·8778532	20
41	2·2556461	2·3385203	2·4284844	2·5264478	2·6334828	2·7508634	2·8801142	19
42	2·2569736	2·3399593	2·4300489	2·5281541	2·6353506	2·7529157	2·8823789	18
43	2·2583029	2·3414002	2·4316155	2·5298630	2·6372211	2·7549712	2·8846474	17
44	2·2596339	2·3428432	2·4331844	2·5315744	2·6390946	2·7570301	2·8869198	16
45	2·2609667	2·3442881	2·4347555	2·5332883	2·6409710	2·7590923	2·8891960	15
46	2·2623012	2·3457349	2·4363289	2·5350048	2·6428502	2·7611578	2·8914760	14
47	2·2636376	2·3471838	2·4379045	2·5367238	2·6447323	2·7632267	2·8937598	13
48	2·2649756	2·3486347	2·4394823	2·5384453	2·6466174	2·7652988	2·8960475	12
49	2·2663155	2·3500875	2·4410624	2·5401694	2·6485054	2·7673744	2·8983391	11
50	2·2676571	2·3515424	2·4426448	2·5418961	2·6503962	2·7694532	2·9006346	10
51	2·2690005	2·3529992	2·4442294	2·5436253	2·6522901	2·7715355	2·9029339	9
52	2·2703457	2·3544581	2·4458163	2·5453571	2·6541868	2·7736211	2·9052372	8
53	2·2716927	2·3559189	2·4474054	2·5470915	2·6560865	2·7757100	2·9075443	7
54	2·2730415	2·3573818	2·4489968	2·5488284	2·6579891	2·7778024	2·9098553	6
55	2·2743921	2·3588467	2·4505905	2·5505680	2·6598947	2·7798982	2·9121703	5
56	2·2757445	2·3603136	2·4521865	2·5523101	2·6618033	2·7819973	2·9144892	4
57	2·2770987	2·3617826	2·4537848	2·5540548	2·6637148	2·7840999	2·9168121	3
58	2·2784546	2·3632535	2·4553853	2·5558022	2·6656292	2·7862059	2·9191389	2
59	2·2798124	2·3647265	2·4569882	2·5575521	2·6675467	2·7883153	2·9214697	1
60	2·2811720	2·3662016	2·4585933	2·5593047	2·6694672	2·7904281	2·9238044	0
′	28°	25°	24°	23°	22°	21°	20°	′

′	70°	71°	72°	73°	74°	75°	76°	′
0	2·9238044	3·0715585	3·2360680	3·4203036	3·6279553	3·8637033	4·1335655	60
1	2·9261431	3·0741507	3·2389678	3·4235611	3·6316395	3·8679025	4·1383939	59
2	2·9284858	3·0767525	3·2418732	3·4268251	3·6353316	3·8721112	4·1432339	58
3	2·9308326	3·0793590	3·2447840	3·4300956	3·6390315	3·8763293	4·1480856	57
4	2·9331833	3·0819702	3·2477003	3·4333727	3·6427392	3·8805570	4·1529491	56
5	2·9355380	3·0845860	3·2506222	3·4366563	3·6464548	3·8847943	4·1578243	55
6	2·9378968	3·0872066	3·2535496	3·4399465	3·6501783	3·8890411	4·1627114	54
7	2·9402597	3·0898319	3·2564825	3·4432433	3·6539097	3·8932976	4·1676102	53
8	2·9426265	3·0924620	3·2594211	3·4465467	3·6576491	3·8975637	4·1725210	52
9	2·9449975	3·0950967	3·2623652	3·4498568	3·6613964	3·9018395	4·1774438	51
10	2·9473725	3·0977363	3·2653149	3·4531735	3·6651518	3·9061250	4·1823785	50
11	2·9497516	3·1003805	3·2682702	3·4564969	3·6689151	3·9104203	4·1873252	49
12	2·9521348	3·1030296	3·2712311	3·4598269	3·6726865	3·9147254	4·1922840	48
13	2·9545221	3·1056835	3·2741977	3·4631637	3·6764660	3·9190403	4·1972549	47
14	2·9569135	3·1083422	3·2771700	3·4665073	3·6802536	3·9233651	4·2022380	46
15	2·9593090	3·1110057	3·2801479	3·4698576	3·6840493	3·9276997	4·2072333	45
16	2·9617087	3·1136740	3·2831316	3·4732146	3·6878532	3·9320443	4·2122408	44
17	2·9641125	3·1163472	3·2861209	3·4765785	3·6916652	3·9363988	4·2172606	43
18	2·9665205	3·1190252	3·2891160	3·4799492	3·6954854	3·9407633	4·2222928	42
19	2·9689327	3·1217081	3·2921168	3·4833267	3·6993139	3·9451379	4·2273373	41
20	2·9713490	3·1243959	3·2951234	3·4867110	3·7031506	3·9495224	4·2323943	40
21	2·9737695	3·1270886	3·2981357	3·4901023	3·7069956	3·9539171	4·2374637	39
22	2·9761942	3·1297862	3·3011539	3·4935004	3·7108489	3·9583219	4·2425457	38
23	2·9786231	3·1324887	3·3041778	3·4969055	3·7147105	3·9627369	4·2476402	37
24	2·9810563	3·1351962	3·3072076	3·5003175	3·7185805	3·9671621	4·2527474	36
25	2·9834936	3·1379086	3·3102432	3·5037365	3·7224589	3·9715975	4·2578671	35
26	2·9859352	3·1406259	3·3132847	3·5071625	3·7263457	3·9760431	4·2629996	34
27	2·9883811	3·1433483	3·3163320	3·5105954	3·7302409	3·9804991	4·2681449	33
28	2·9908312	3·1460756	3·3193853	3·5140354	3·7341446	3·9849654	4·2733029	32
29	2·9932856	3·1488079	3·3224444	3·5174824	3·7380568	3·9894421	4·2784738	31
30	2·9957443	3·1515453	3·3255095	3·5209365	3·7419775	3·9939292	4·2836576	30
31	2·9982073	3·1542877	3·3285805	3·5243977	3·7459068	3·9984267	4·2888543	29
32	3·0006746	3·1570351	3·3316575	3·5278660	3·7498447	4·0029347	4·2940640	28
33	3·0031462	3·1597876	3·3347405	3·5313414	3·7537911	4·0074532	4·2992867	27
34	3·0056221	3·1625452	3·3378294	3·5348240	3·7577462	4·0119823	4·3045225	26
35	3·0081024	3·1653078	3·3409244	3·5383138	3·7617100	4·0165219	4·3097715	25
36	3·0105870	3·1680756	3·3440254	3·5418107	3·7656824	4·0210722	4·3150336	24
37	3·0130760	3·1708484	3·3471324	3·5453149	3·7696636	4·0256332	4·3203090	23
38	3·0155694	3·1736264	3·3502455	3·5488263	3·7736535	4·0302048	4·3255977	22
39	3·0180672	3·1764095	3·3533647	3·5523450	3·7776522	4·0347872	4·3308996	21
40	3·0205693	3·1791978	3·3564900	3·5558710	3·7816596	4·0393804	4·3362150	20
41	3·0230759	3·1819913	3·3596214	3·5594042	3·7856760	4·0439844	4·3415438	19
42	3·0255868	3·1847899	3·3627589	3·5629448	3·7897011	4·0485992	4·3468861	18
43	3·0281023	3·1875937	3·3659026	3·5664928	3·7937352	4·0532249	4·3522419	17
44	3·0306221	3·1904028	3·3690524	3·5700481	3·7977782	4·0578615	4·3576113	16
45	3·0331464	3·1932170	3·3722084	3·5736108	3·8018301	4·0625091	4·3629943	15
46	3·0356752	3·1960365	3·3753707	3·5771810	3·8058911	4·0671677	4·3683910	14
47	3·0382084	3·1988613	3·3785391	3·5807586	3·8099610	4·0718374	4·3738015	13
48	3·0407462	3·2016913	3·3817138	3·5843437	3·8140399	4·0765181	4·3792257	12
49	3·0432884	3·2045266	3·3848948	3·5879362	3·8181280	4·0812100	4·3846638	11
50	3·0458352	3·2073673	3·3880820	3·5915363	3·8222251	4·0859130	4·3901158	10
51	3·0483864	3·2102132	3·3912755	3·5951439	3·8263313	4·0906272	4·3955817	9
52	3·0509423	3·2130644	3·3944754	3·5987590	3·8304467	4·0953526	4·4010616	8
53	3·0535026	3·2159210	3·3976816	3·6023818	3·8345713	4·1000893	4·4065556	7
54	3·0560675	3·2187830	3·4008941	3·6060121	3·8387052	4·1048374	4·4120637	6
55	3·0586370	3·2216503	3·4041130	3·6096501	3·8428482	4·1095967	4·4175859	5
56	3·0612111	3·2245230	3·4073382	3·6132957	3·8470006	4·1143675	4·4231224	4
57	3·0637898	3·2274011	3·4105699	3·6169490	3·8511622	4·1191498	4·4286731	3
58	3·0663731	3·2302846	3·4138080	3·6206101	3·8553332	4·1239435	4·4342382	2
59	3·0689610	3·2331736	3·4170526	3·6242788	3·8595135	4·1287487	4·4398176	1
60	3·0715585	3·2360680	3·4203036	3·6279553	3·8637033	4·1335655	4·4454115	0
′	19°	18°	17°	16°	15°	14°	13°	′

′	77°	78°	79°	80°	81°	82°	83°	′
0	4·4454115	4·8097343	5·2408431	5·7587705	6·3924532	7·1852965	8·2055090	60
1	4·4510198	4·8163258	5·2486979	5·7682867	6·4042154	7·2001996	8·2249952	59
2	4·4566428	4·8229357	5·2565768	5·7778350	6·4160216	7·2151653	8·2445748	58
3	4·4622803	4·8295643	5·2644798	5·7874153	6·4278719	7·2301940	8·2642485	57
4	4·4679324	4·8362114	5·2724070	5·7970280	6·4397666	7·2452859	8·2840171	56
5	4·4735993	4·8428774	5·2803587	5·8066732	6·4517059	7·2604417	8·3038812	55
6	4·4792810	4·8495621	5·2883347	5·8163510	6·4636901	7·2756616	8·3238415	54
7	4·4849775	4·8562657	5·2963354	5·8260617	6·4757195	7·2909460	8·3438986	53
8	4·4906889	4·8629883	5·3043608	5·8358053	6·4877944	7·3062954	8·3640534	52
9	4·4964152	4·8697299	5·3124109	5·8455820	6·4999148	7·3217102	8·3843065	51
10	4·5021565	4·8764907	5·3204860	5·8553921	6·5120812	7·3371909	8·4046586	50
11	4·5079129	4·8832707	5·3285861	5·8652356	6·5242938	7·3527377	8·4251105	49
12	4·5136844	4·8900700	5·3367114	5·8751128	6·5365528	7·3683512	8·4456629	48
13	4·5194711	4·8968886	5·3448620	5·8850238	6·5488586	7·3840318	8·4663165	47
14	4·5252730	4·9037267	5·3530379	5·8949688	6·5612113	7·3997798	8·4870721	46
15	4·5310903	4·9105844	5·3612393	5·9049479	6·5736112	7·4155959	8·5079304	45
16	4·5369229	4·9174616	5·3694664	5·9149614	6·5860587	7·4314803	8·5288923	44
17	4·5427709	4·9243586	5·3777192	5·9250095	6·5985540	7·4474335	8·5499584	43
18	4·5486344	4·9312754	5·3859979	5·9350922	6·6110973	7·4634560	8·5711295	42
19	4·5545134	4·9382120	5·3943026	5·9452098	6·6236890	7·4795482	8·5924065	41
20	4·5604080	4·9451687	5·4026333	5·9553625	6·6363293	7·4957106	8·6137901	40
21	4·5663183	4·9521453	5·4109903	5·9655504	6·6490184	7·5119437	8·6352812	39
22	4·5722444	4·9591421	5·4193737	5·9757737	9·6617568	7·5282478	8·6568805	38
23	4·5781862	4·9661591	5·4277835	5·9860326	6·6745446	7·5446236	8·6785889	37
24	4·5841439	4·9731964	5·4362199	5·9963274	6·6873822	7·5610713	8·7004071	36
25	4·5901174	4·9802541	5·4446831	6·0066581	6·7002699	7·5775916	8·7223361	35
26	4·5961070	4·9873323	5·4531731	6·0170250	6·7132079	7·5941849	8·7443766	34
27	4·6021126	4·9944311	5·4616901	6·0274282	6·7261965	7·6108516	8·7665295	33
28	4·6081343	5·0015505	5·4702342	6·0378680	6·7392360	7·6275923	8·7887957	32
29	4·6141722	5·0086907	5·4788056	6·0483445	6·7523268	7·6444075	8·8111761	31
30	4·6202263	5·0158517	5·4874043	6·0588580	6·7654691	7·6612976	8·8336715	30
31	4·6262967	5·0230337	5·4960305	6·0694085	6·7786632	7·6782631	8·8562828	29
32	4·6323835	5 0302367	5·5046843	6·0799964	6·7919095	7·6953047	8·8790109	28
33	4·6384867	5·0374607	5·5133659	6·0906219	6·8052082	7·7124227	8·9018567	27
34	4·6446064	5·0447060	5·5220754	6·1012850	6·8185597	7·7296176	8·9248211	26
35	4·6507427	5·0519726	5·5308129	6·1119861	6·8319642	7·7468901	8·9479051	25
36	4·6568956	5·0592606	5·5395786	6·1227253	6·8454222	7·7642406	8·9711095	24
37	4·6630652	5·0665701	5·5483726	6·1335028	6·8589338	7·7816697	8·9944354	23
38	4·6692516	5·0739012	5·5571951	6·1443189	6·8724995	7·7991778	9·0178837	22
39	4·6754548	5·0812539	5·5660460	6·1551736	6·8861195	7·8167656	9·0414553	21
40	4·6816748	5·0886284	5·5749258	6·1660674	6·8997942	7·8344335	9·0651512	20
41	4·6879119	5·0960248	5·5838343	6·1770003	6·9135239	7·8521821	9·0889725	19
42	4·6941660	5·1034431	5·5927719	6·1879725	6·9273089	7·8700120	9·1129200	18
43	4·7004372	5·1108835	5·6017386	6·1989843	6·9411496	7·8879238	9·1369949	17
44	4.7067256	5·1183461	5·6107345	6·2100359	6·9550464	7·9059179	9·1611980	16
45	4·7130313	5·1258309	5·6197599	6 2211275	6·9689994	7·9239950	9·1855305	15
46	4·7193542	5·1333381	5·6288148	6·2322594	6·9830092	7·9421556	9·2099934	14
47	4·7256945	5 1408677	5·6378995	6·2434316	6·9970760	7·9604003	9·2345877	13
48	4·7320524	5·1484199	5·6470140	6·2546446	7·0112001	7·9787298	9·2593145	12
49	4·7384277	5·1559948	5·6561584	6·2658984	7·0253820	7·9971445	9·2841749	11
50	4·7448206	5·1635924	5·6653331	6·2771933	7·0396220	8·0156450	9·3091699	10
51	4·7512312	5·1712128	5·6745380	6·2885295	7·0539205	8·0342321	9·3343006	9
52	4·7576596	5·1788563	5·6837734	6·2999073	7·0682777	8·0529062	9·3595682	8
53	4·7641058	5·1865228	5·6930393	6·3113269	7·0826941	8·0716681	9·3849738	7
54	4·7705699	5·1942125	5·7023360	6·3227884	7·0971700	8·0905182	9·4105184	6
55	4·7770519	5·2019254	5·7116636	6·3342923	7·1117059	8·1094573	9·4362033	5
56	4·7835520	5·2096618	5·7210223	6·3458386	7·1263019	8·1284860	9·4620296	4
57	4·7900702	5·2174216	5·7304121	6·3574276	7·1409587	8·1476048	9·4879984	3
58	4·7966066	5·2252050	5·7398333	6·3690595	7·1556764	8·1668145	9·5141110	2
59	4·8031613	5·2330121	5·7492861	6·3807347	7·1704556	8·1861157	9·5403686	1
60	4·8097343	5·2408431	5·7587705	6·3924532	7·1852965	8·2055090	9·5667722	0
′	12°	11°	10°	9°	8°	7°	6°	′